A **RESOURCE GUIDE** on the *journey to* **safety excellence**

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

01 Making the case for safety

The importance of safety in business goes beyond compliance. Safety is a value, an opportunity to engage all employees in a journey that prevents harm, promotes productivity and contributes to operational excellence and profitability. As one of the founders of the National Safety Council, Robert W. Campbell once said, "Safety work is today recognized as an economic necessity, and one of the most constructive movements that has ever come into our national life. **It is the study of the right way to do things.**" Those words are as true today as they were in 1914. To create a culture grounded in safety, the belief in "the right way to do things" must be embraced at every level of an organization, by every employee.

Each of the factors listed on the right play a role in the importance of establishing and maintaining a safety management system. Consider these when you set your safety vision, communicate your plan to all employees and determine how you will measure performance and return on investments in safety.

EHS excellence is intrinsic to business excellence

The most prestigious honor in environment, health and safety, the **Robert W. Campbell Award**, demonstrates that organizations that embrace safety outperform organizations that do not.

Financial: A priority for all businesses is how to increase bottom-line performance. Effective safety and health efforts contribute to a healthier, higher performing workforce. This has direct bearing on productivity, quality and efficiency, all of which lead to improved profitability.

Humanistic: Whether producing a product, service or other goods, the work of a company means supervisors dealing with people, not financial statements and profit and loss. When management demonstrates real concern for the safety and well-being of its people, it engages all employees in a caring manner where safety becomes a shared responsibility. The result is a highly effective, collaborative process of continuous improvement that enhances morale and a culture of safety.

Regulatory: Smart companies understand that regulatory requirements represent minimum standards that they must comply with and that their safety management systems should set a far higher expectation for disciplined performance. In other words, a commitment to a rigorous safety management system supports the regulatory requirements of such agencies as OSHA, EPA and DOT. Unfortunately, there are some companies who do not understand this principle and they are subject to enforcement, violations, penalties and in the most egregious situations, criminal punishment and negative public relations.

Public Relations: Customers, business partners and communities expect organizations to be responsible and do no harm. The consequence of poor safety management, injuries and fatalities is employee turnover, compromised quality and negative public relations. In today's society, the ease of information sharing makes it possible for even the smallest infraction to quickly damage an organization's image.

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The business case for safety

Companies who commit to safety as a value and integrate safety into all aspects of the business have proven to be more profitable. As safety improves, so does quality, efficiency and productivity. High performing workforces and workplaces experience fewer injuries, reduced business interruption and better outcomes. They also create stronger engagement with workers so they develop, thrive, and contribute to safety and business results. Research has shown that businesses that find ways to engage employees in meaningful ways have people who are more motivated to contribute to the organization's performance and less likely to look for employment elsewhere. And safety is a great way to develop that engagement that in turn leads to positive outcomes for other important improvement initiatives such as quality and efficiency.
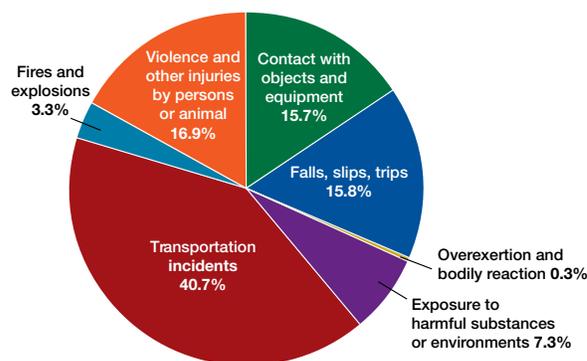
Additionally, investing in your safety management system makes a measurable impact on your bottom line. OSHA estimates that implementation of a safety management system will save U.S. businesses between $9- $23 billion in annual workers' compensation claims, which are only more aggravated by the rising cost of medical care. This represents a significant competitive advantage for the companies that achieve these and other savings associated with reduced injuries and illnesses. Further evidence of the business case for safety is a study by Goldman Sachs Australia that found that effective safety management systems had a very strong link to investment performance, and that this was a highly effective basis for an investment strategy in terms of short and long term holdings.* Putting an infrastructure in place to support a system of continuous improvement makes sense in any industry, even if perceived risk is low. According to Liberty Mutual, **$1 invested in safety has a $3-$6 return on investment.** Safety provides the necessary foundation on which organizations can grow and prosper.

Incident statistics

Companies need to be certain that they are reporting all incidents, including near misses, so that root causes can be determined and corrective actions taken to prevent similar incidents from occurring. Looking across industries at the most frequent causes of disabling injuries (injuries with days away from work) and fatal injuries, it's clear that there are common causes of concern. Every company needs to consider their own leading causes and prioritize their hazard control and risk reduction efforts accordingly. Near miss reporting is especially important as it identifies incidents that have the potential for fatal or serious injuries which are less frequent than nonfatal injuries. While the following chart focuses only on injury causes, companies must also consider the occupational health exposures that can lead to illness. In fact, occupational illness in the workplace is estimated to cause more than 50,000 fatalities and 420,000 illnesses, with the estimated cost at 60 billion dollars.
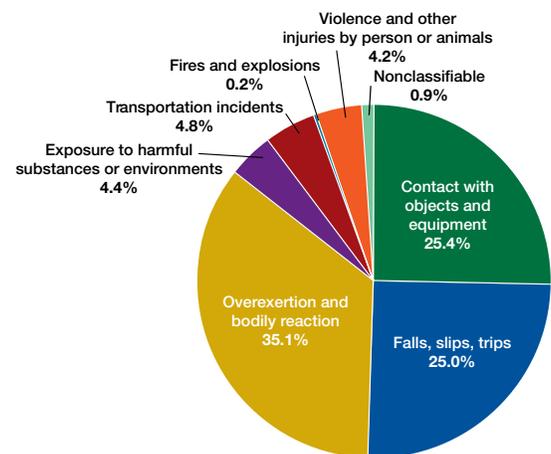

Deaths[a] by event or exposure, United States, 2013

Violence and other injuries by persons or animal 16.9%
Contact with objects and equipment 15.7%
Fires and explosions 3.3%
Falls, slips, trips 15.8%
Transportation incidents 40.7%
Overexertion and bodily reaction 0.3%
Exposure to harmful substances or environments 7.3%

Source: Bureau of Labor Statistics.
[a]Includes deaths among all workers.
[b]Includes cases with days away from work among private-sector wage and salary workers.
[c]Excludes government employees, the self-employed, and unpaid family workers.
"n.e.c." means "not elsewhere classified."

Violence and other injuries by person or animals 4.2%
Fires and explosions 0.2%
Nonclassifiable 0.9%
Transportation incidents 4.8%
Exposure to harmful substances or environments 4.4%
Contact with objects and equipment 25.4%
Overexertion and bodily reaction 35.1%
Falls, slips, trips 25.0%

Cases with days away from work[b] by event or exposure, United States, 2013

Goldman Sachs JBWere Investment Research Report, October 2007

Injury Costs

Employers incur both direct and indirect costs when employees are injured. Direct costs typically include Workers' Compensation expenses that cover wage replacement, medical care, return to work, rehabilitation and litigation. Indirect costs are more difficult to quantify, but estimates generally include hiring and training of replacement personnel, reduced productivity, cost of overtime to make up for lost production, loss of business opportunities, decreased morale and other intangibles reflected in the increased cost of doing business. Indirect costs of injury are estimated to range from one to five times the magnitude of direct costs, depending on the type of industry and organization involved.

The business case for safety is clear. Working to constantly improve work practices, environment and culture will significantly save both direct and indirect costs, improve productivity and lead to business excellence.

Off-the-job safety

While employers aren't legally responsible for employees in their homes and communities, what employees do away from work affects the organization. And unfortunately, once employees leave the work facility for the day, they are at greater risk for injury and illness.

In 2014, an estimated total of more than 136,000 people died from unintentional injuries in the United States. Of these, more than 4,000 deaths occurred in the American workplace. Although the motor vehicle death rate has declined, there are still far too many fatal motor vehicle crashes with more than 35,000 people losing their lives. Additionally, 98,600 deaths occurred in the home and community. Of all the unintentional deaths, only 3% occurred at work.

Off-the-job nonfatal injuries also affect millions of American workers. Nine out of ten deaths and about 75% of the medically-consulted injuries* suffered by workers in 2014 occurred off the job.

Production time lost due to both fatal and nonfatal off-the-job injuries totaled about 270 million days in 2014, compared with 65 million days lost by workers injured on the job. Off-the-job injuries to workers cost the nation at least $339.4 billion in 2014 compared to $140 billion for on-the-job injuries.

Off-the-job illnesses and injuries significantly impact business. Not only do they affect the company's bottom line through higher health insurance costs, paid sick leave and the cost of temporary help when employees or their family members are touched by illness or death, these injuries and illnesses also have the residual effect of reducing worker morale and productivity. It is in every employer's best interest to do as much as possible to protect employees and their families both on and away from their jobs.

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As an employer, what can you do?

Encourage employees to take their on-the-job safety practices and knowledge home with them.

- Offer comprehensive safety training that can be applied in every environment and distribute handouts
- Where possible, allow employees the opportunity to borrow PPE and other safety equipment for use at home
- Consider including safety tip inserts in employee paychecks
- Make subscriptions to health and safety newsletters and periodicals part of an employee benefit package
- Offer safety program incentives that can be used by the whole family

Your employees are your organization's most valuable resource. Their health and safety both on and off the job should be one of your greatest concerns. A truly comprehensive safety management system takes safety into account 24/7.

Safety is a journey

Let's look at what we know about high performing workplaces. While safety requirements may seem different across industries, exemplary organizations all have something in common. They are all on a journey, a cycle of improvement that aims for a continual reduction of risk with a goal of zero incidents. This is what the National Safety Council calls the *Journey to Safety Excellence*®. We call it a Journey because there is always opportunity for further progress and improvement in saving lives. Even organizations that have attained close to zero injury performance understand that they must continue the process of improvement.

Based on rigorous consideration of research as well as best practices of world-class safety organizations, four key pillars make up the Journey and are critical for an organization to achieve safety excellence. These four pillars, described with accompanying icons below, are interdependent and when fully integrated as a workplace safety strategy, have significant impact on protecting employees and enhancing organizational performance and profitability.

Leadership and employee engagement: Leaders foster a culture where safety is fully integrated in the business and is a core value where all employees are engaged and share responsibility

Safety management systems: A strong safety management system is a framework of processes and procedures to ensure that work tasks are completed safely to achieve objectives

Risk reduction: Risk is the combination of the probability of an event and the severity of the injury that may result. Risk is always present in the workplace and those organizations who actively strive to reduce it will outperform those who do not.

Performance measurement: To manage improvement, it is essential to have measurable goals to track performance, looking at leading and lagging indicators and how they are related

The National Safety Council provides the tools, knowledge and resources organizations need as they ask themselves three key questions on their Journey:

Where am I now and where do I want to be?
It is vital that companies have the means to measure their performance to identify gaps and prioritize needs. This helps to create improvement plans and investment priorities. The Council offers such tools in the form of employee perception surveys and safety management system assessments to help determine strengths and weaknesses, and establish goals for improvement.

How do I move forward? Improvement requires plans and the capability to execute the plans. What do I need to do, how do I do it and do I have the capability to do it? NSC membership is your passport to a meaningful Journey along with a variety of education and training courses. Whether your Journey is just beginning or nearing zero injuries, the Council has solutions to meet your needs.

How do I manage my improvement and measure my progress? Smart companies understand that by using emerging technology, they can master the information and data generated from safety activities to prioritize investments, take rapid action to reduce risk and measure performance changes over time.

NSC is committed to helping all organizations – large and small, private and public, government and business – progress on their Journey. The National Safety Council wants to be your partner every step of the way.

Summary

Safety not only protects an organization's employees, it creates an optimal workplace where employees have every advantage to successfully perform their job. In the following sections, you will find a description of each of the pillars of the *Journey to Safety Excellence* and how they are integral to continuous improvement. It will take the participation of your entire workforce to fully realize the most successful outcome.

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02 Leadership and employee engagement

Creating a safety culture

Just as your corporate culture includes and affects all employees – from top management to the front line workers – so does a safety culture. Consider what your organization would look like if only top executives or only line employees practiced safe habits in the workplace. You would see inconsistencies in process, gaps in buy-in and more incidents and injuries. A safety culture can only grow when everyone in the company embraces safety as a key component in their everyday work. Regardless of shifts in personnel, equipment, products or procedures, when safety is embedded in the company culture, it has the following benefits:

• **Improved morale**

• **Lower turnover**

• **Improved quality of work and efficiency**

• **Improved productivity**

• **Reduced absences**

• **Reduction in frequency and severity of work-related injuries and illnesses**

• **Reduced costs**

• **Reduced workers' compensation claims**

• **Reduced risk of fines and lawsuits**

• **Increased profitability**

• **Favorable company image**

Starting at the top

The first step on the Journey calls for personal commitment to safety—not only commitment to safety as a value, but commitment to the management factors that integrate this value into the culture. The Journey begins with leadership. The CEO or president sets the tone for the safety culture. This tone will frame the level of importance of safety within the organization.

Leaders must foster a culture where safety is fully integrated in the business and is a core value where all employees are engaged and share responsibility for each others well-being. They must demonstrate a strong, genuine, continuous and personal commitment to safety.
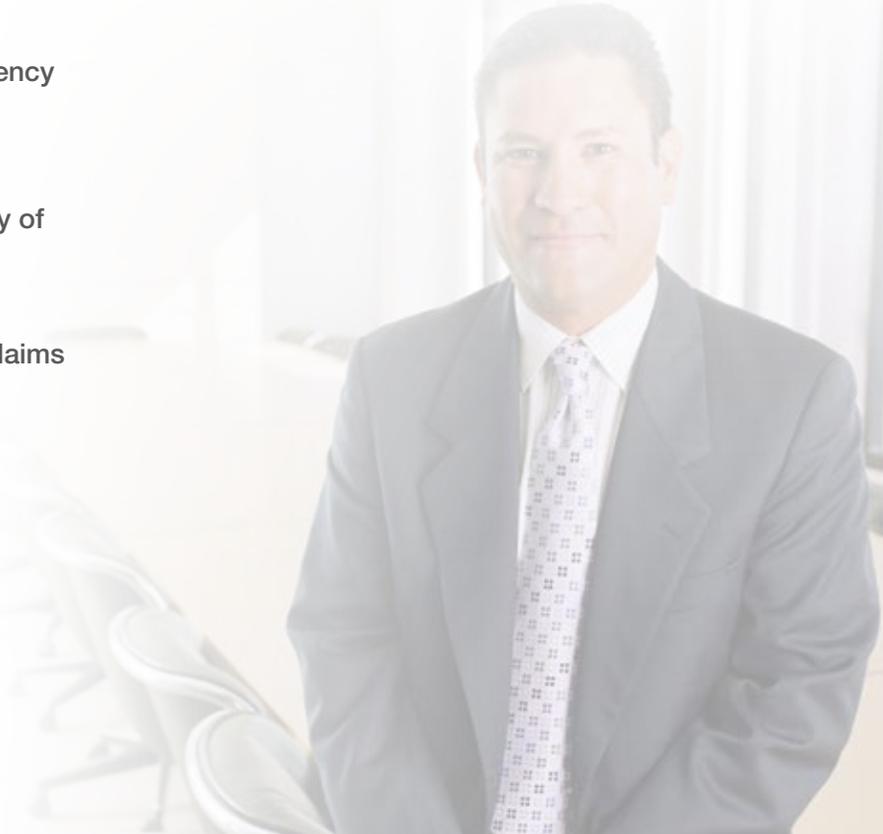
Steps for **effective safety** leadership

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1. **Create a safety vision:** Cultural change requires effort and persistence, and is best embraced when leaders and employees view the change as essential to the organization's success. Assess the impact the change will have so that you can plan a way to explain it to the team and involve them in the execution.

2. **Establish a core team:** Including employees on the core team responsible for leading the change effort goes a long way toward successful execution. The team is responsible for communicating the need for change, anticipating reactions and addressing concerns, designing and executing the change, monitoring results and publicizing successes.

3. **Communicate and support the vision and key values:** The safety culture vision is achieved when all employees demonstrate that they embrace safety in their daily work – in Robert W. Campbell's words, when they believe that safety is "the right way to do things." Employees need to also observe that management believes it, to support the change.

4. **Communicate what is changing and why:** Employees need to know the importance of the change. The urgency to change should be tied to important business goals and successes.

5. **Give leaders and managers feedback on their leadership:** Set regular meetings to review processes and find ways to continuously improve.

Employee engagement

In conjunction with effective safety leadership, employee engagement is the other key component of the first pillar in the *Journey to Safety Excellence.* Without active participation by all members of an organization, a safety culture will not evolve and the safety management system cannot reach its full potential. The benefits of active participation are:

• Employees who do the work know the most about the risks involved and how to make the work safer
• Employees feel valued when their ideas and suggestions are requested and taken seriously
• Employees will support and use processes, policies and programs because they have been involved in forming them
• Employees have a personal interest in recognizing hazards and reporting them

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Employee engagement challenges

Barriers can prevent an organization from realizing the full potential of meaningful employee involvement. If employees resist participating in the safety process, consider addressing common barriers:

Attitude: The attitude of an organization, from top to bottom affects the success of a safety management system. It's important to acknowledge that employees will resist change unless that change is framed with a positive outcome for them as individuals. These are specific attitudinal obstacles and misconceptions to address for both leaders and employees:

- Lack of trust
- A climate of fear
- The uncertainty of constant change
- Treating change like a program instead of a process
- A history not conducive to employee involvement
- Leaders who won't let go
- Workers who focus on their coworkers' imperfections
- Amount of time and effort involved

Roles and responsibilities: Roles must be established, communicated and upheld to have a successful safety management system. It's important to involve individuals in the planning process as well as execution to ensure buy-in and organization-wide approval. Resistance to your safety system can result from:

- Lack of demonstrated commitment from top leadership
- Lack of responsibility from top management
- Not involving all the key stakeholders
- Not involving the unions (forming a partnership)
- Resistance from any of the partners (supervisors, managers, support people, unions or labor force)
- Failure to redefine the role of leadership

Training: When making changes to a system or rolling out a new system, you need ample time to train a core team of experts and then additional time for people to change old habits, ask questions and make adjustments. The success of a safety management system can be challenged by:

- Inadequate training
- Team members being assigned or assuming too much responsibility
- Inadequate time for training to take root, leading to employee frustration and fear of getting it wrong

Infrastructure: It's important to build the right environment for a safety management system. It's not something that can happen overnight and will not be adopted homogeneously across an organization. It takes time and constant communication. Systems that fail often encounter these problems:

- Systems and structures not designed to support teams
- Too little or too much structure
- Failure to communicate what's happening
- Not allowing enough time to change
- No transition plan
- Lack of positive attention given to even the smallest improvements

The first step in the Journey calls for personal commitment to safety—not only commitment to safety as a value, but commitment to the management factors that integrate that value into the culture. The Journey begins with leadership.

Involve the whole organization

Regardless of title, level or position, every employee should be encouraged to take ownership of their safety as well as the shared responsibility of the safety of others. Use these activities to engage your organization in safety on a regular basis.

Suggestion box: With minimal effort, creating an anonymous space for employees to request change will help give them a voice and will relieve them of any whistleblower fears in speaking up. Your organization could also have an online form that accomplishes this task, especially if you have a number of offices or remote employees.

Forums: Bringing together employees from different departments and/or locations to discuss safety topics will give employees a fresh perspective on their workplace while also creating a stronger sense of community across your organization.

Committees: Create safety committees to improve your workplace and empower your employees to choose a committee. These can include work groups such as ergonomics, off-the-job safety, wellness and orientation/training.

Surveys: To gauge where employees stand on an issue, you can easily implement a short multiple-choice survey to benchmark employee perception. You can also include a brief comment area to capture any related thoughts that were not part of the survey. By taking the time to administer this survey and then sharing the results shortly after, employees will feel that you value their input. The next step is an action plan based on your findings.

Stand down: A stand down is a shutdown of work, taking place after a major incident occurs with the goal of assessing the situation companywide. But even before an incident occurs, your organization can adopt this process to demonstrate how seriously your company takes safety, to teach employees how to address hazards and incidents and also to start a dialogue with your employees about safety. Set aside two to three hours to stop all work at your organization and dedicate this time to safety education.

Safety drills: While drills are a key element in compliance, they also demonstrate how important it is for employees to work as a team and how 100% participation is absolutely necessary in an emergency and a safety management system.

Hazard and incident reporting: Smart leaders know it's best to set up a reporting culture, making it the job of all employees to actively seek out hazards in the workplace. By collecting data into one dynamic database, you will be able to take action quickly and efficiently to correct the issue or potential issue.

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Safety talks: At your weekly or monthly meetings, begin with a short safety talk. Discuss timely safety concerns such as winter driving tips or summer skin protection. Come up with creative topics or even reiterate important reminders about cooking safety, child restraint in cars or prescription drug safety. As a member benefit, you have access to the NSC 5-minute safety talk series – short informative PDFs to share with your staff. Encourage all members of your group to take turns presenting a topic. You can find this series when you login to nsc.org as a member and visit the practical tips section of the Member Exclusive Content.

Safety projects: Engage your employees with safety activities that can benefit the organization and their communities. Encourage employees to come up with something personally significant to them. This might be the distribution of hand sanitizer with a handout about proper food handling and tips on limiting the spread of germs. Another idea could be setting up a team to check the tire pressure of employees' vehicles. Get creative and share your projects throughout your organization.

Summary

Developing and implementing a strong and successful safety culture has many benefits. If it is properly implemented it can combat potential safety hazards regardless of changes in personnel, equipment, products and procedures. Some of the benefits include:

- Improved productivity, quality of work, efficiency and worker morale
- Reduced frequency and severity of work-related incidents, costs related to absences, workers' compensation claims, fines and lawsuits
- Lowered employee turnover

Successful safety leaders can support a continuously improving, effective safety culture by ensuring that workers understand what safety behaviors are expected of them. This starts with leadership commitment to safety that reflects their beliefs, attitudes, values and principles about safety. These principles should be in the form of organizationwide policies and practices. Leadership should share the accountability and success of the program by getting employees involved in improving and maintaining the safety culture.
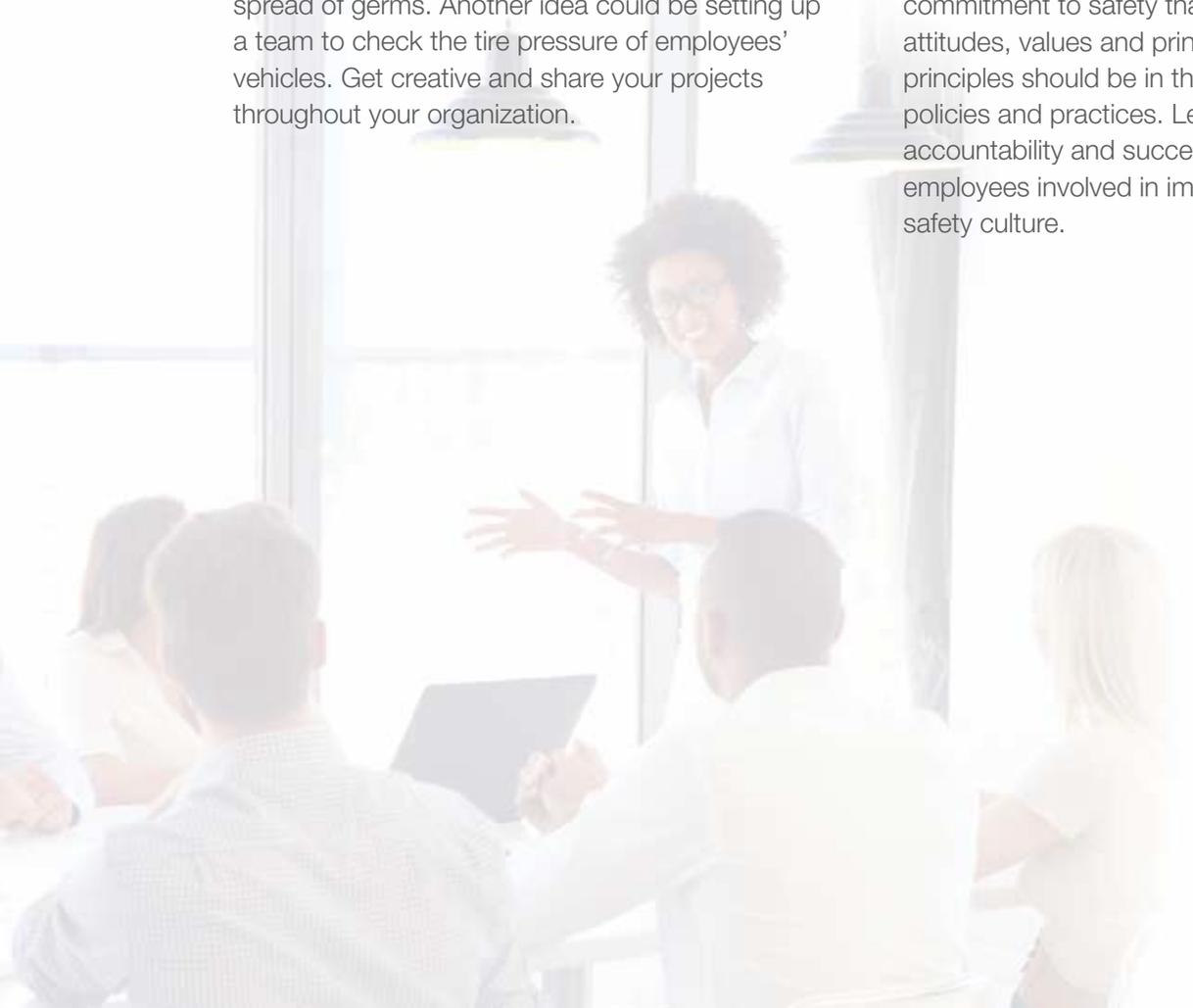
03 Safety management systems

A safety management system is a continuous process that reduces hazards and prevents incidents. It is the core element that protects the health and safety of your employees and should be integrated into everyday processes throughout the organization. A safety management system holds management accountable for safety through goal setting, defining roles and responsibilities, developing proactive performance measures and holding individuals accountable for their responsibilities. Success or failure to achieve these goals should be treated the same as production, quality, sales or budget goals.

Mission: safety

Creating a safety management system is not different than other new product or program development. It starts with a vision or mission statement, one that is general and easy to understand. An example could be "commitment to zero injuries." Once the vision is determined, an organization must develop a strategy to achieve the vision. They must then create policies and procedures to define the who, what, when, where, why and how of achieving the vision.

A safety management system is a continuous process that reduces risk and prevents incidents.

The ultimate safety management system is comprised of equal parts administrative and management, operational and technical, and cultural and behavioral aspects of safety and health:

Leadership and management elements address the **"why"** of managing safety. This is answered through leadership and commitment, measuring safety performance and communicating the results of managing safety. These elements include:

- Management leadership and commitment
- Organizational communications and system documentation
- Assessments, audits, evaluations and metrics for continuous improvement

Operational and technical elements are the **"how"** of safety management. Factors such as hazard control, workplace design, regulatory compliance, occupational health and environmental management are all addressed by operational and technical elements. These elements include:

- Hazard recognition, evaluation and control
- Facility design and engineering
- Operational safety programs

Cultural and behavioral elements address **"who"** is involved in such a system – all employees. This requires a cross-functional team approach involving all stakeholders. These elements include:

- Employee involvement
- Motivation, behavior and attitude
- Training and orientation

The following five basic steps will keep safety incorporated throughout your organization daily, year after year. These steps are a cycle that with repetition will result in continuous improvement.

Measure: Determine the current state of safety within your organization, repeat measurement determining improvement over baselines and share findings.

Determine gaps and set goals: Using the baseline, set and share measurable goals for improvement. Align safety improvement goals with business priorities. Communicate a vision of what the organization could be and how it will strive to achieve the vision.

Develop improvement plans: Create a path forward and assign specific goals. Gain leadership support and communicate the plan to the whole organization. Rely on proven practices that increase chances of success.

Implement plans: Make the plan happen. Provide training when and where needed. Make sure to acknowledge success when identified gaps are closed and performance improves.

Capture lessons learned: Determine which strategies and tactics were successful. Eliminate the unsuccessful ones, enhance or expand the others. Assess your efforts and continue the cycle for incremental, sustainable improvement.

Summary
Safety management systems require time to set up and manage throughout an organization. But once a system is established, you'll find that having a safety structure in place will provide efficiency and security that is well worth the time and resources invested to build the foundation. And just as you will be evaluating incidents for root causes, you will also need to continue to evaluate your safety management system with the goal of continuous improvement for a safer workplace.
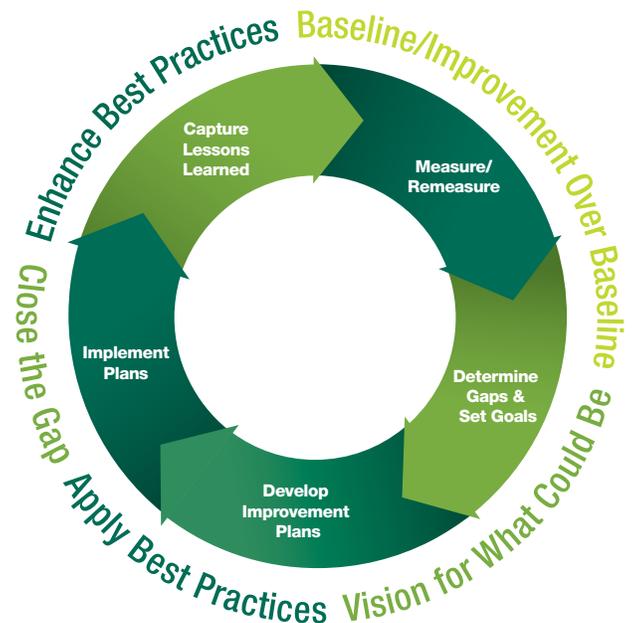
04 Risk reduction

Risk is the probability of an event occurring and the severity of the injury that may result. An example of high risk is a loose cord in the middle of a high traffic area while low risk might be a wrinkle in the carpet under a piece of furniture. We see examples of these throughout the workplace. **Our collective job is to identify, evaluate and eliminate or control these hazards before they cause injury.**

Hazard identification and control are at the core of successful injury prevention and require the following steps:

1. Collect and analyze data
2. Outline work processes involved in the business activity
3. Focus on hazardous work areas
4. Assess the degree of risk
5. Develop control steps for unsafe conditions
6. Determine priorities

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If left uncontrolled, recognized hazards that produce no injury or a minor first aid injury today can produce a disabling or serious injury in the future.

Types of hazards

Hazards are everywhere. Even the simplest of tasks can involve risk. The problem is that when the hazard is not eliminated or adequately controlled, the risk of injury increases. A successful safety management system depends on spotting these hazards early, evaluating the risk and removing or controlling hazards before they can do harm. **There are four basic types of workplace hazards – chemical, physical, biological and ergonomic.**

Chemical hazards result from chemicals that enter the body through inhalation, skin contact, absorption, injection and ingestion. The best way to prevent a chemical hazard incident is to control the routes of entry into the body.

Physical hazards affect the body. These include excessive noise levels, vibration, radiation, fire, slips, falls and temperature extremes and can have immediate and cumulative health effects.

Biological hazards result when a living organism or its properties causes an adverse response in humans. Biological hazards in the workplace come from agents such as infectious microorganisms, allergens and toxins.

Ergonomic hazards generally refer to a mismatch between a workers' physical capacity and the design of a work area, equipment or tools, or the physical demands of the job. The physical injury resulting from repetition, forceful exertions, awkward postures and vibration is a musculoskeletal disorder.

These hazards can be prevented in several ways such as:

• Fitting the job to the worker instead of the reverse
• Providing the right personal protective equipment for each type of hazard
• Training the worker to correctly perform his/her job

Assessing risk

After being identified, hazards must be evaluated and assessed for risk. Assessing the risk of a hazard involves ranking its potential to cause an incident using the following elements:

Exposure considers the number of employees performing a job and the number of times a job is performed to determine the effect of a hazard. Is this task performed by a few employees a few times per day? Is this task performed by a few employees frequently? Or is this task performed by many employees frequently?

Probability refers to the probability of loss that occurs each time a job is performed. It is influenced by many factors, such as the hazards related to the job, the difficulty of performing the job and complexity of the job.

Severity considers the effect most likely to happen if the job task is performed improperly. Would the effect be negligible, causing no injury or illness, no production loss and no lost workdays? Would the effect be marginal with minor injury or illness? Would the effect be critical with severe injury, lost time, major property damage, yet no permanent disability or fatality? Or would the effect be catastrophic and include permanent disability or death?

In this evaluation, the key question is:
How likely is it that things will go wrong when this job is performed? Is there a low, moderate or high probability of an incident?

The answers to the questions should lead to a ranking of each hazard. Some hazards will be ranked as an emergency with imminent danger that requires immediate attention, while others will be ranked with lower risk and a longer cycle for action.

Hazard risk assessment
Risk Prioritization Matrix

HAZARD SEVERITY		HAZARD PROBABILITY				
		-A- Frequently	-B- Probable	-C- Occasional	-D- Remote	-E- Improbable
		Occurring often: high likelihood of occurring, no controls in place	Repeat occurrence: likely to occur, controls not used or ineffective	History of occurrence: may occur once, secondary controls in place	Difficult to occur: unlikely but possible, reliance on work practices to control risk	Very difficult to occur: no history of occurrence, unlikely to occur
		5	4	3	2	1
I - Catastrophic: An incident would result in death or uncontrolled environmental impact	5	EXTREME				
II - Serious/ Irreversible: Severe occupational injury or illness, or major system damage	4		HIGH			
III - Serious/ Reversible: Occupational injury or illness, or major system damage	3			MEDIUM		
IV -Marginal: Minor occupational injury or illness or minor environmental impact	2				LOW	
V - Negligible: No injury or measurable environmental impact	1					

Job safety analysis

A commonly used hazard analysis technique is the job safety analysis or JSA. It is a systematic analysis of each task involved in performing a job. It specifies a step-by-step procedure for workers to follow, identifies potential hazards and outlines how to avoid them. Job safety analysis makes jobs safer so that there are fewer incidents and fewer people getting hurt. It's important to note that as roles change within companies, periodic job safety analysis can regularly help to catch new hazards or improper operations that arise.

How to do a job safety analysis:

1. Take inventory of occupations and jobs

2. Select which jobs are to be analyzed

3. Outline each task of the job

4. Divide the tasks into steps

5. Observe each step

6. Identify hazards and assess risk

7. Develop solutions and procedures to eliminate hazards or improve controls

8. Review the job safety analysis

9. Implement the job safety analysis

When evaluating each task for hazards consider the following:

• Is there danger of striking or or being struck by an object?
• Is there danger of being caught in, by or between objects?
• Is there danger of slipping, tripping or falling?
• Can pushing, pulling, lifting, lowering, bending, carrying, reaching or twisting cause strain?
• Is there danger of harm to the eyes, hands, feet or other parts of a worker's body?

This system will give employees a method to track hazards on a regular basis. They should be encouraged to complete hazard reports pertaining to their work area and for public workspaces as well.

Management should complete an ongoing review of records of injury and illness over time to look for patterns and potential hazards. Particularly if an incident occurs, it's important to investigate and find the who, what, when, where and why involved. Once you determine the hazard, you can take action to control or eliminate it. This should also apply to near misses as well.

Hierarchy of hazard controls

When worker exposure to health or physical hazards is found to pose a risk, a control program must be implemented. The control methods chosen depend on the specific hazard, magnitude of exposure, effectiveness and available technology. The diagram below shows the hierarchy of hazard controls with the most effective methods at the top and the least effective at the bottom.

Elimination is the most effective means of hazard control and involves the physical removal of the hazard. A simple example of this could be removing an unnecessary light that creates a glare on an office monitor.

Substitution works by removing something that produces a hazard and replacing it with something that does not produce a hazard. An example of this might be replacing a toxic chemical with one that is eco-friendly. It's important to make sure that the substitution does not create a different hazard.

Engineering controls improve a situation by designing the hazard out of the process. Rather than focusing on protecting the employee, engineering controls concentrate on the job and the work environment to eliminate or reduce exposure to the hazard.
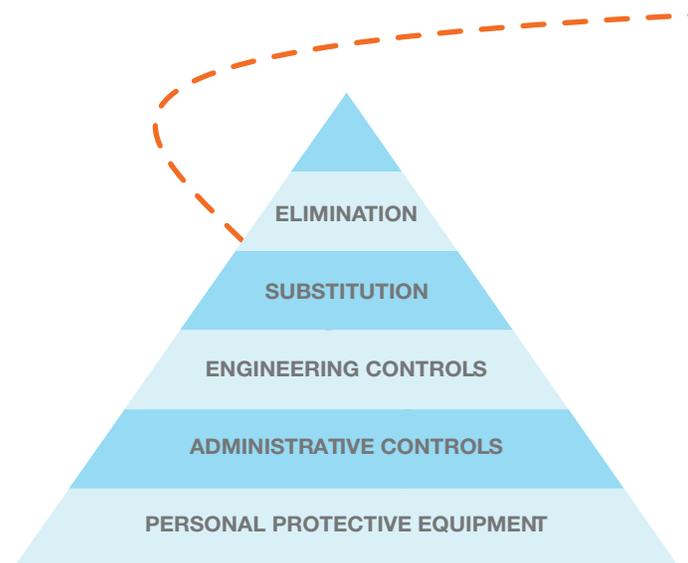
Administrative controls reduce worker exposure by implementing policies, procedures and rules. Examples of such controls include training, regularly scheduled breaks and housekeeping. These controls minimize risk.

Personal protective equipment accepts the fact that a hazard exists and protects workers from injury resulting from the hazard. These controls, including respirators, gloves or safety glasses, do not reduce hazards, but provide a barrier between the worker and the hazard. This last approach should be used only after other controls have been exhausted.

Incident response and management

Even after identifying hazards, conducting analyses and implementing controls, incidents can still occur. The first step is to investigate what went wrong within the safety management system. You will uncover the cause or causes of the hazard and then be able to determine how to correct it. While this may sound reactive, the corrective action you take as a result of the investigation is proactive – attempting to prevent a repeat of a similar incident. It's important to note that even if an employee is involved in an incident, the cause lies with the system, not the individual.

Investigate all incidents. Even though near miss or close call incidents do not result in injury or damage, they should be heeded as a warning sign. If corrective action is not taken, the incident can occur again and may result in a serious injury or fatality.

ELIMINATION

SUBSTITUTION

ENGINEERING CONTROLS

ADMINISTRATIVE CONTROLS

PERSONAL PROTECTIVE EQUIPMENT

10 basic steps to **investigating** an incident

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1 Provide emergency response.
This step includes immediately providing first aid to injured employees until necessary medical attention can be administered.

2 Secure the area.
The area where the incident occurred needs to be roped or taped off, and any machine involved should be turned off and locked out. This step prevents a repeat incident from occurring, while preserving all evidence for investigation.

3 Identify potential witnesses.
List everyone involved or anyone who might have seen or heard anything relating to the event.

4 Have the necessary investigative tools available.
Such tools might include a camera with photo and video capability, a voice recorder, flashlight, barricade markers, tape, tags and padlocks.

5 Save evidence and record data.
The scene should be documented as it was found and evidence should be collected or recorded.

6 Conduct interviews.
Interview anyone involved in the incident.

7 Review the data.
Examine the inspection reports, maintenance reports, prior incident reports and analyses, noting any patterns or trends.

8 Prepare an investigation report.
All facts, interviews and data collected should be combined into a written report.

9 Determine the root causes.
This step eliminates or improves control of the hazard to prevent future incidents.

10 Follow up.
Check back to make sure the hazardous condition was corrected.

Root cause analysis

Sometimes, even after an investigation, the cause of the incident is not clear. You can get a more in-depth look by analyzing four key elements – equipment, environment, people and management. Ordinarily, these four elements work in harmony to produce products or services. But sometimes they work together in unexpected ways to produce incidents. Ask a series of questions regarding each element to assist in the examination:

• Did a hazardous condition with the equipment contribute?
• Was the location/position of equipment/materials/ employees a contributing factor?
• Was the job procedure a contributing factor?
• Was lack of personal protective equipment or emergency equipment a contributing factor in the injury?
• Was a management system defect a contributing factor?

Once you get to the cause, you can begin to identify the appropriate correction to prevent a similar incident. In fact, there may be many possible corrections. Select those with the best chance of reducing risk. Consider factors such as effectiveness, cost, feasibility, effect on productivity, time required to implement, extent of supervision required, acceptance by employees and acceptance by management. Corrective actions that best address these factors are more likely to reduce worksite risks.

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Recordkeeping

In the regular course of business, an organization keeps records of its most important transactions such as sales, expenses, profits and losses. Incident records are just as important and some are actually required by law. Incident records showing causes, related injuries, illness and property damage help managers learn how to control and prevent hazards that can cause incidents.

The reports required by law – and commensurate penalties for failing to comply – are governed by the Occupational Safety and Health Administration. These include:

- **OSHA 300 log of work-related injuries and illnesses:** This log is used to classify work-related injuries and illnesses and note the extent and severity of each case

- **OSHA 301 injury and illness incident report:** This form must be completed for each injury or illness that is in the 300 log

- **OSHA 300-A summary of work-related injuries and illnesses:** This is a separate form that categorizes the total number of incidents each year by type and is posted annually from February 1-April 30

Accurate recordkeeping will not only allow you to stay on top of compliance needs, it will also enable employers to pinpoint hazards, reduce risk and prevent incidents. While many organizations still use paper or static databases such as excel reports to track incidents, it's best to record and manage records in a dynamic and actionable database.

Ideally, employees will have access to the system and can submit incident reports right after they occur. This enables management to communicate, investigate and take action immediately, expediting the correction and prevention of further injuries.

Summary

Organizations that strive to continue reducing risk to the lowest possible levels will outperform organizations that do not. Successful risk reduction requires a culture where every employee takes ownership of hazards and an active interest in preventing incident and injury. It also requires a successful safety management system that provides the foundation for effective communication and correction.

05 Performance measurement

How is safety measured?

A safety program's effectiveness is often measured solely on the basis of its failures. Failure-focused measures such as the lost-time incidence rate or lost-time severity rate can only indicate that problems exist; they don't identify what the specific problems are or how to solve them.

The ultimate goal of any safety program is to prevent or minimize failures. The programs that achieve the goal—the really effective safety systems—focus on activities that are positive, proactive and designed to target the underlying causes of failures. Activities such as job safety analyses, job safety observations, safety inspections, safety meetings and safety training are proactive approaches that have been demonstrated to promote improvements in overall safety performance.

In safety, effective measurement should show a relationship between safety management and the number of incidents over time. For example, implementing job safety analyses should result in lower incidence rates, lower workers' comp costs, fewer lost workdays and lower expenditures. This example also proves that safety pays- when a company invests money, time and other resources in safety, the result is reduced spending on incidents.

In addition to proving the value of safety, the data generated from measuring specific safety indicators can help pinpoint needed modifications in safety activities. The result of such measurements is a continuing improvement process that reduces incident rates.

What should an organization track?

Many measurement systems focus on incidents that have occurred. Such techniques measure an organization's failures and point out that problems exist. Reactive measurements do not identify the specific problems or how to solve them. Examples of reactive data include:

• Incident rate
• Number of incidents reported and investigated
• Total workers' compensation costs
• Number of first aid cases
• Number of near misses or unsafe conditions reported and investigated

Conversely, measuring proactive activities is positive and designed to target the underlying causes of failures. It may take some digging but the resulting measurements are worth the effort required to find the data. Examples of proactive data include:

• Number of departments that have met safety training requirements
• Number of managers and employees trained in safety hazard recognition and incident investigation
• Scores on safety quizzes from training courses
• Number of meetings with safety included on the agenda
• Number of attendees at safety meetings
• Number of departments with written safety action plans
• Number of scheduled workplace inspections or audits completed
• Number of actions from workplace inspections completed

Exercise: calculate and compare incident rates

One of the most telling pieces of data that you can collect relates to incident rates. While this is data based on reactive activities, this information will provide you with a baseline from which to start measuring safety in your organization.

Incident rates can provide a common measure to compare industries, departments, facilities and progress over time. In fact, the Occupational Safety and Health Administration, its compliance officers and the Bureau of Labor Statistics all use incident rates regularly to measure companies, industry sectors and workplace safety in general.

An incident rate is calculated using a simple formula. The formula is based on the premise that the average employee works 2,000 hours per year – 40 hours a week multiplied by 50 weeks a year – and uses a company with 100 employees as the standard.

The formula looks like this:
Incident rate = (**No. of incidents X 200,000)**
(Total number of hours worked in a calendar year where 200,000 is the number of hours worked by the standard 100-employee company)

÷ (No. of employees X 2,000)
(2,000 is the number of hours worked by the standard employee in a calendar year)

Incident rate = (No. of incidents X 200,000)
÷ (No. of employees X 2,000)

For example, a company with 350 employees, 5 incidents and 700,000 total hours worked would have an incident rate of 1.4.

The formula would look like this:
1.4 = (5 x 200,000) / (350 x 2,000)
This company's incident rate of 1.4 per 100 employees could then be compared to the national incident rate of 3.5, according to the Bureau of Labor Statistics. The Bureau puts the non-fatal incident rate for all private industries at 3.2 per 100 full time employees in 2014. The company in the example is well under the national rate for all industries.

Collect additional data

Additional proactive data that is used less often but should still be collected includes:

- Number of safe acts reported and recognized
- Number of managers and employees with safety goals as part of performance expectations
- Number of safety inspections or walkthroughs by management
- Number of managers observing safety procedures

If you measure illness data, you will find it is more difficult to track than injury data and is often underrepresented. Injuries are typically acute and can be linked to one occurrence while illnesses develop over time, such as respiratory disease caused by the inhalation of hazardous fumes.

The best safety measurement systems combine reactive and proactive data. Use reactive activities to benchmark and proactive activities to identify necessary modifications for continuous improvement to the safety program.

Where is your organization today?

To develop a plan to improve your safety culture, you must first know where you are. How engaged are your employees in safety? Are rules not only in place but followed and enforced? Do all staff members and contractors have the training and equipment to do their jobs safely and efficiently? The first step in a safety program is establishing a baseline.

NSC safety system assessment

NSC offers a FREE online qualitative self-evaluation on how effectively your safety process is being managed located at **nsc.org/journey**. The assessment questions are based on commonalities among corporations that have successfully implemented proactive safety processes to reduce injuries and costs and increase production and quality. It is to be completed by one person, preferably the safety manager, as a first step in the process. If you'd like to get a more comprehensive consensus of safety across your entire organization, you can do so with an employee perception survey.

Employee perception surveys

These companywide surveys evaluate subjective factors, such as attitudes, values and perceptions that influence the safety management system. Such surveys can also identify major gaps between management and employee perceptions, as well as pinpoint problem areas that might be overlooked with other data. These surveys provide a set of leading indicators of safety program quality and effectiveness. For more information visit **nsc.org/journey**.

If your organization has never participated in an employee perception survey, the easiest way to start is with an online survey product. NSC offers an efficient and confidential solution that captures every employee response and also benchmarks the results against a database of more than 500 organizations- that's more than a million employees! This gives you an accurate picture of how your organization is doing compared to others across the world and across industries.

For a more in-depth look at your organization, NSC offers full-service consultation services to help your organization analyze its current picture, examine reactive and proactive measures and put together an action plan to move toward safety performance goals. Find out more at **nsc.org/surveys**.

NSC Incident Rate Calculator

Get knowledgeable about your safety incidents by using the NSC Incident Rate Calculator. This benchmarking tool calculates your incident rates based on entered OSHA 300 log information and allows locations to compare their safety performance against Bureau of Labor Statistics (BLS) industry averages for up to a 6-digit NAICS code. For more information visit **nsc.org/journey**.

Summary

The key to measuring performance is to first establish a baseline of where you are today so that you can measure progress over time. Once you identify your current state, along with areas that need improvement, you can set goals. Make sure that you have a means of recording this progress, such as a prioritized action plan with objectives, deadlines and employee roles. Schedule regular meetings to check progress and address obstacles as they arise. Empower your team with the responsibility of creating reports and tracking improvements.

At the end of the year or established timeline, compare your new results to your original baseline. Communicate the project objectives and success to your organization and reinforce your safety culture by rewarding your employees for their contribution.

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06 Next steps

Assess your safety program

The National Safety Council wants to partner with you on the *Journey to Safety Excellence*® to bring your safety program to the next level. We've created free, practical tools and resources to help any organization looking to improve.

When you sign up you will gain access to:

• NSC Safety System Assessment
• NSC Employee Safety Perception Survey
• NSC Incident Rate Calculator
• Hundreds of e-resources
• Regular updates on safety news and events

Additional resources

NSC offers many exclusive resources to our members to help you on your Journey. You will find a number of resources on the NSC membership page at **nsc.org/members** or outlined in your Member Benefits Guide. These are just some of our online resources:

• Visit **safetyandhealthmagazine.com** for comprehensive national coverage of occupational safety news and analysis of industry trends

• Visit **nsc.org/family** to find out how you can use NSC publications to promote balance and wellness in the lives of your employees and improve their outlook, health and productivity

• Visit **nsc.org/training** to take advantage of online, onsite and classroom training

• Visit **nsc.org/institutelibrary** and create a login for the Campbell Institute library to access a wealth of best practice articles

We look forward to helping you move forward on your *Journey to Safety Excellence!*

Helpful websites

nsc.org/journey
thecampbellinstitute.org
OSHA.gov
cdc.gov/NIOSH/

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