



EHS Services & Solutions

EHS guide to  
injury reduction  
**Helping you  
reach your  
desired level of  
safety success**

**bsi.**

...making excellence a habit.™



A photograph of four diverse professionals (two women and two men) standing in a factory or industrial setting. They are all smiling and have their arms crossed. The background shows industrial equipment and a large, open space with high ceilings and bright lighting. A semi-transparent dark grey circle is overlaid on the image, containing the text for the table of contents.

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# 1. Why worry about injuries and incidents?

Safety leaders have long been championing the need for effective processes to reduce the risk of injuries and illnesses. The golden thread is that a focus on safety provides a significant return on investment through reduced disruption of incidents, lower insurance costs, improved morale, efficiency and productivity.

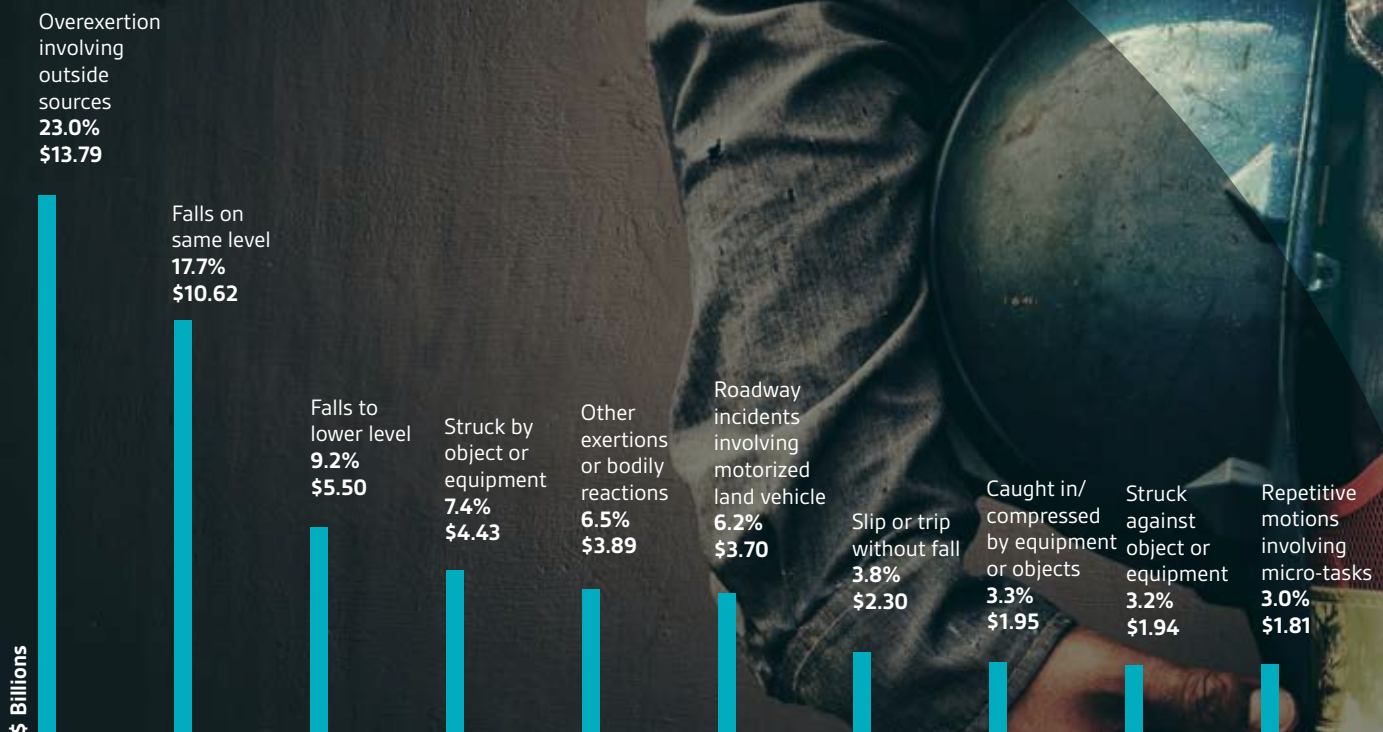
Let's consider what happens when someone gets hurt. What's the cost to the injured? Their family? The organization? The range of direct costs such as workers compensation payments, medical expenses, lost time, injury investigations and legal services can be staggering but must also be discussed alongside the indirect costs such as replacing/retraining employees, employee morale, absenteeism, lost productivity and damage to property.

**"In addition to their social costs, workplace injuries and illnesses have a major impact on an employer's bottom line. It has been estimated that employers pay almost \$1 billion per week for direct workers' compensation costs alone."**

– United States Department of Labor Business Case for Safety and Health<sup>i</sup>

## Top 10 causes and direct costs of the most disabling US workplace injuries<sup>ii</sup>

**2017 Liberty Mutual Workplace Safety Index**  
 Total cost of the most disabling workplace injuries: **\$59.87 billion**  
 Cost of top 10 most disabling workplace injuries: **\$49.92 billion**



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# 2. How are you doing with respect to injuries and incidents?

As an exercise, consider the following questions:

- What percentage of your colleagues do you expect to get hurt at work next year seriously enough that they will need medical attention to heal?
- Is that acceptable? Why or why not?
- Should we have any tolerance above zero percent?

What if other organizations that you use personally – say doctors or airlines – advertised that their “success” rate was the same as yours? (i.e., would you fly on an airline that advertised that “99.5% of the of the time, you can count on us to fly you safely to your destination”)?

# 3. The role of paradigms in influencing organizational safety success.

<sup>iv</sup>OSHA defines a recordable injury or illness as...

- Any work-related fatality
- Any work-related injury or illness that results in loss of consciousness, days away from work, restricted work or transfer to another job
- Any work-related injury or illness requiring medical treatment beyond first aid
- Any work-related diagnosed case of cancer, chronic irreversible diseases, fractured or cracked bones or teeth and punctured eardrums
- Any work-related cases based on special recording criteria such as needlesticks and sharps injuries, medical removal, hearing loss and tuberculosis

**Question: Are injuries and incidents inevitable?**

If you answered yes, consider how that belief influences your reactions when something goes wrong. To illustrate the point, consider how these traditional paradigms influence our actions:

- It won't happen to me
- You can't make everything idiot-proof
- Accidents happen
- When push comes to shove, safety loses
- We are already safe enough
- Caring for customers is more important than employee safety
- Our industry is inherently risky
- Management is more concerned with production, schedules and costs than safety
- People are careless

The paradigms that world-class safety performers embrace are that all injuries are **preventable**; and there **are no injuries that are acceptable**.

## The situation in numbers<sup>iii</sup>



### Every 15 seconds

a worker dies from a work-related accident or disease and 153 workers have a work-related accident



### 6,300 each day

The number of people who die as a result of occupational accidents or work-related diseases



### 317 million

accidents occur on the job annually



### 4% global GDP

The estimated cost of poor occupational safety and health practices each year



## 4. Changing the way we manage safety.

### 1. Historic approach in the US

**Herbert William Heinrich** (1886 – 1962) was an American industrial safety pioneer from the 1930s who published *Industrial Accident Prevention, A Scientific Approach* in 1931. One of his empirical findings, known as Heinrich's Triangle, stated that in a workplace, for every accident causing a major injury, there are 29 accidents that cause minor injuries and 300 accidents that cause no injuries (see Figure 1). Because many accidents share common root causes, addressing more commonplace accidents that cause no injuries can prevent accidents that cause injuries.<sup>v</sup>

Heinrich's work is often claimed as the basis for the theory of **behavior-based safety**, which shows that as many as 95% of all workplace accidents are caused by unsafe acts. Heinrich came to this conclusion after reviewing thousands of accident reports completed by supervisors, who generally blamed

workers for causing accidents without conducting detailed investigations into the root causes.

This research was further developed by Frank E. Bird Jr. into the concept of the safety triangle where he found a similar ratio existed (1:10:30). Further studies have looked at adding lower levels into the pyramid and triangle approach as shown in Figure 2 below.

**These early concepts shaped much of how safety is managed today, which is to:**

- Try to reduce injuries by managing toward targets (e.g., this plant has worked 213,000 hours without a lost day injury)
- Focus on employees and their behaviors exclusively
- When things go wrong, respond with behavior corrections such as retraining or discipline



Figure 1 : Heinrich's foundation of a major injury



Figure 2: Safety triangle with additional levels

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### 2. The limits of this approach

**Lagging indicator targets and focus on employee behaviors (alone) often hide minor injuries and near-misses which can give a misplaced sense of success. When something does finally go wrong, it's severe or catastrophic.**

Investigations of recent catastrophes have shown employee behaviors are indeed the immediate causes, but those behaviors have almost always been supported—expressly or implicitly—by leadership, both formal and informal.

If you compare the use of common elements of safety programs (such as safety meetings, committees or job hazard analyses) at different organizations they will be highly effective in one place and ineffective in another. Why?

Leadership and culture have a major influence on whether the elements of your program are going to work.<sup>vi</sup> Even the best employees will do whatever it takes to cope with the conditions leaders create for their work environment. This condition creates a conflict of **priorities**. "Safety is our number one priority" is a flawed approach as priorities change continually.

Priority conflicts are usually resolved by relying on underlying values; to influence behavior, safety must be a value, not a priority. For most US organizations, safety has been a priority at best. To change, something different has to happen.

The change must focus on adding another layer for **safety culture and leadership** that will ensure the right behaviors to eliminate injuries.

### Focusing on safety culture and leadership

#### Result: Major injury

Major injuries can be reduced or eliminated by focusing more attention on the layers below.

#### Result: Minor injury

Each minor injury should be investigated for direct and indirect causality with appropriate corrective actions. Particular attention should be given to categories of minor injuries that had the potential to be major.

#### Behavior and leadership:

Unsafe acts, unsafe conditions, process findings, safe acts, assessments, best practice

Tracking and analyzing **unsafe acts, unsafe conditions and process findings** will help to highlight where injuries can happen and identify preventative actions. Going deeper to focus on positive behaviors for safe actions, assessments and observed best practice will help to align the right behavior.

#### Safety culture and leadership:

Investigations, performance review, communication, recognition, accountability (systems approach), shared values

**Investigations, performance review, communication, recognition, accountability (systems approach) and shared values** are all aspects of driving safety culture that will prevent injuries from happening.

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### 3. A 21<sup>st</sup> century approach

High-performing organizations build and sustain vibrant safety cultures by focusing on three things:

1. Demonstrating highly visible, unwavering leadership support for the safety and well-being of employees
2. Strong commitment from employees for their own safety and that of their colleagues
3. Establishing clear, open, honest and frequent two-way communication about commitment to safety between employees and leadership

### 4. The role of the leader

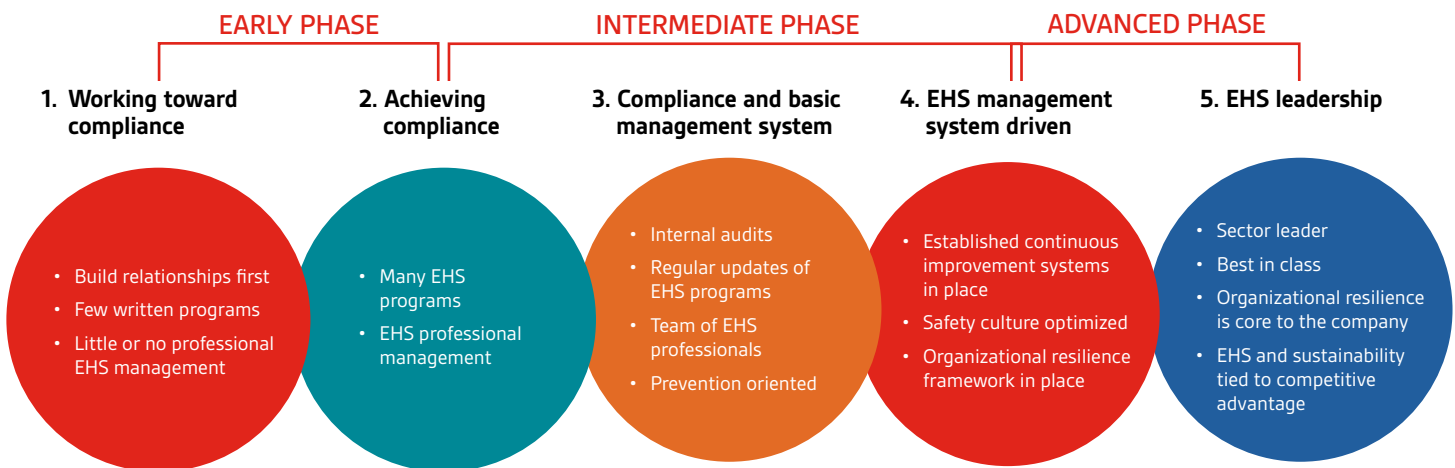
As demonstrating highly visible leadership support is a crucial component of a vibrant safety culture, it is worth reviewing the role of the leader. In organizations that have a vibrant safety culture, leaders:

- Build relationships first
- Express commitment and promote a prevention culture
- Engage employees—ask for opinions, advice, concerns, areas for improvement and proposed solutions
- Follow up without exception
- Make visible decisions using safety as a foundation

## 5. Where do you start?

We have discussed reducing injuries and illness by creating a vibrant safety culture that goes beyond the traditional approaches to behavior-based safety. But where do you start?

It's helpful to understand the relative maturity of your organization using a maturity model. Consider where your organization stands in comparison to the graphic below:



Evaluating where you stand will help you determine the correct tactics for your organization based on its relative maturity.

### 1. Early phase tactics – establishing compliance

The focus at this level of maturity will be on **establishing compliance** before moving to more sophisticated tactics. Activities to address include:

- What are our risks? (Risk assessment)
- How do we address those risks? (Developing procedures, job hazard analysis, employee and contractor expectations, establish safety, ergonomics and other EHS programs)
- How do we teach employees to work safely? (Training)
- How do we know how well we are doing? (Compliance auditing)
- How do we correct and improve when something goes wrong? (Incident investigation, root cause analysis and communication of lessons learned)

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### 2. Intermediate phase tactics – adding self-assessment

Once your organization has firmly established a repeatable system of compliance, a good next step is to augment compliance with self-assessment for continual improvement:

- **Focus on prevention using data** – set a baseline by reviewing your injury data and self-assessments in addition to obtaining information from externally available sources.
- **Conduct injury/incident investigations** – (analysis of our starting point) using effective methods that consider interview techniques, incident investigation worksheet tools, root cause analysis and targeting. It's particularly useful to include human factors as part of your analysis, as well as techniques that enable an effective root cause analysis.
- **Use your analysis of data to set goals and make changes in your departments**—create leading indicators to help you report and correct issues, identify target areas for improvement and establish SMART (Specific, Measureable, Achievable, Responsible, Time-related) objectives.
- **Create your safety "team"**—staff have great solutions. Find and empower your safety champions.
- **Transition from reactive to proactive safety management**—consider adopting a systematic approach outlined in OHSAS 18001, the emerging ISO 45001 standard, and the broader organizational resilience standard BS 65000. This focuses on the ability of an organization to anticipate, prepare for and respond to incremental change and sudden disruptions in order to survive and prosper.
- **Publicize and celebrate successes**—create success stories that can be shared and remembered.

### Building EHS resilience throughout the organization

- Optimize operational EHS compliance
- Regulatory forecasting
- Continuity of operation during business disruption
- Minimize reputational risk
- Ensure business continuity
- Preserve community and environment
- Safeguard people
- Ensure regulatory compliance
- Manage disaster recovery protocols
- Provide appropriate protections for the facility
- Anticipate and meet your customer's EHS requirements
- Protect worker and personnel throughout your supply

### Advanced phase tactics – leadership

Much of the advanced phase tactics involve leadership skills to integrate safety into existing communication processes (meetings, 1:1s, on the job conversations) to build an informed culture. This involves asking great questions of your employees and addressing safety concerns and identifying how EHS can support different roles and functions. In this phase leaders should:

- Focus on the value of employees, the organization and the community
- Make decisions based on how well they support the organization's values
- Allow leadership to emerge at the lowest levels





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**Making safety a part of everyday conversations** is an important tool to drive a vibrant safety culture. Safety is incumbent upon us all to participate, not because we have to but because morally we should. Popular tools involve Safety “minutes,” Safety “shares,” Safety gembas – “what if you see something that could be unsafe?” and encouraging communication (wellness checks, idea boards). Using observation audits and rounding can also be an effective tool to discuss safety.

A key message in this phase is **“don’t wait for safety to come to you,”** use active consultation via huddles, committees, all hands meetings etc. to determine what will work best for your organization.

Another important factor is **deciding what to communicate about safety.** Incident reports, new initiatives, responses to suggestions, corrective and preventive actions are an important part of the equation so discussing “what” and “how” to share is crucial to improve performance.

**Measure and communicate success:** Critical to advanced stage tactics is to make safety performance highly visible throughout the organization in order to promote an environment for discussion and coaching. Some examples of this include:

- Safety dashboards with leading indicators
- Four block and full A3
- Safety newsletters, safety shares and internal case studies
- Department/unit level/location ideas for recognizing safety champions
- Coaching areas of underperformance based on unsafe behaviors, near misses and incidents

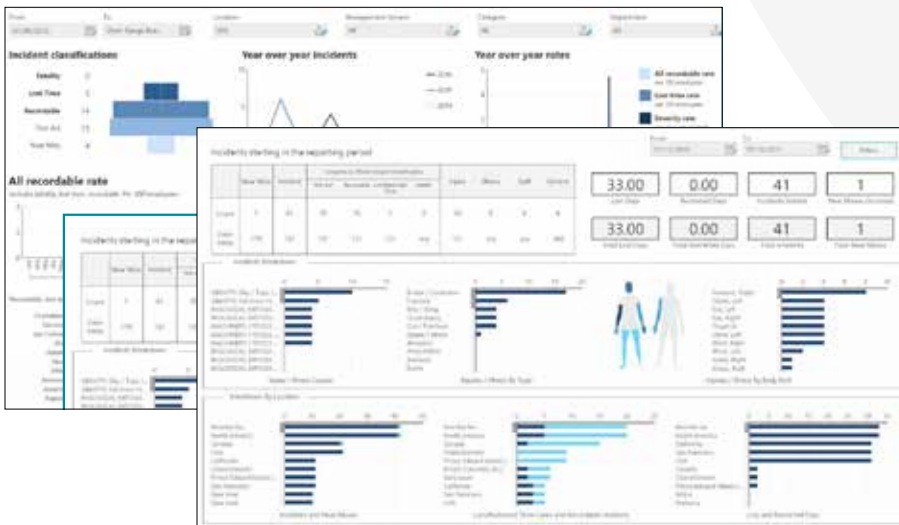
**What advice do you have for other safety and health professionals hoping to make a difference?**

**“I believe the single most important factor in making a difference for employee safety is to seek and enable management support. Of course, it is important for safety and health professionals to be technically savvy and to continuously learn about the occupational safety topics that are expected for our jobs.**

**The companies that have the best chance at building successful workplace safety programs are those that have leaders who want to create a safe work environment and who back up that goal with resources, such as hiring a safety professional for technical support, training, and by engaging employees and supervisors.”**

– Bill Kness, P.E., CSP, Past President  
Columbia Willamette Chapter of ASSE

## Use safety dashboards and leading indicators to make safety performance highly visible



Source: BSI EHS - Entropy Incident Management Module

## 6. The benefits of focusing on a positive safety culture and injury prevention

**Every injury is preventable and by creating a positive safety culture (planning, learning, informed, flexible, reporting, just) you can help your employees to return home in the same or better condition than they started each day.**

Each injury provides information on how we can make the workplace safer – we should approach with a desire to learn (not with blame) using good process to optimize safety along with resources and time.

Understanding how to assess the need for and ask for resources to support your safety program is key and can be discussed in terms of:

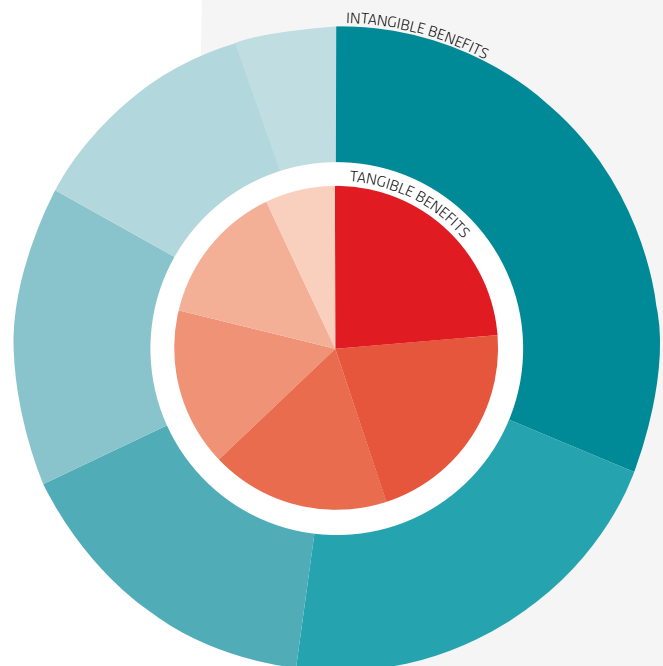
- Increased productivity, quality, efficiency, profitability and competitiveness
- Reduced costs of incidents, downtime, disruption and morale
- Aligning with lean concepts for performance improvement
- Building a brand reputation and developing brand loyalty
- Inspiring innovation and improving employee retention

### The case for information solutions:

To tackle more intermediate and advanced stage strategies, leaders in EHS don't leave their information management processes to chance:

- They align appropriate tools and processes to improve efficiency and data accuracy compared to conventional methods using spreadsheets, emails and safety meetings alone
- They create sound data and process workflows to manage information from various areas drawing from incidents, near misses, unsafe actions/conditions, root cause investigation, leading indicators, performance metrics, action tracking, training records, self-assessments and hazard analysis, to name a few
- They analyze their data to generate actionable insights to continuously improve their safety performance

The following example highlights some important intangible benefits of management information solutions, while also addressing tangible benefits that can be measured directly to build your business case for a modern approach to injury reduction.



#### Intangible benefits

- Protect and enhance brand value (31%)
- Prove internal control (21%)
- Increase shareholder value (16%)
- Improve competitiveness (15%)
- Reduce demands on IS infrastructure (12%)
- Improve consulting contribution (5%)

#### Tangible benefits

- Reduce incidents costs (24%)
- Improve resource efficiency (21%)
- Improve value of corporate information (18%)
- Alignment of systems (16%)
- Enhance knowledge base (14%)
- Reduce document management costs (7%)



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### How can implementing a management system help?

Management system standards have been evolving at a fast pace with the recent introduction of the high level structure for ISO 9001:2015 and ISO 14001:2015. This thinking is a central tenet of the new international standard ISO 45001 for occupational health and safety (published in March 2018) which replaced BS OHSAS 18001 which BSI originally pioneered to improve safety performance.

BSI's global survey with organizations that have implemented a health and safety management system demonstrates the top benefits achieved and the value of taking a systematic and continual approach to improvement.

### The benefits of a health and safety management system\*

The top benefits our clients have identified include:



**79%**

say it helps them  
comply with regulations



**63%**

say it helps them reduce  
the likelihood of mistakes



**57%**

say it inspires  
trust in their business



**55%**

say it helps  
reduce business risk



**54%**

say it helps protect  
their business

*\*Source – BSI voice of the customer 2012-2016*



## 7. Getting started with BSI EHS

We have the expertise and solutions to help you achieve success with your injury reduction strategy and implementation program. For more information visit [bsigroup.com/en-us](https://bsigroup.com/en-us) or call 1 800 862 4977.

Maturity	Support
<p><b>Early Phase</b></p>	<ul style="list-style-type: none"> <li>• Organization context, program review</li> <li>• Baseline prioritization of issues assessment (vs safety compliance and best practice)</li> <li>• Job Hazard Assessment (JHA) review</li> <li>• Regulatory review</li> <li>• Historical analysis of past incident data, mine for insights</li> <li>• Compliance process implementation (issue management, action tracking)</li> </ul>
<p><b>Intermediate Phase</b></p>	<ul style="list-style-type: none"> <li>• Safety culture training</li> <li>• Process improvement</li> <li>• Investigation and root cause analysis</li> <li>• Improvement actions</li> <li>• Safety inspections and self-assessment</li> <li>• Performance tracking (dashboards)</li> <li>• Management system training and implementation</li> <li>• Benchmarking</li> </ul>
<p><b>Advanced Phase</b></p>	<ul style="list-style-type: none"> <li>• Leadership development</li> <li>• Systems approach to improvement</li> <li>• Creating a positive safety culture</li> <li>• Advanced performance tracking (dashboards) and information solutions</li> <li>• Advanced management system solutions</li> <li>• Management system improvement</li> <li>• Advanced benchmarking</li> </ul>

## 8. References

- <sup>i</sup> United States Department of Labor – Business Case for Safety and Health <https://www.osha.gov/dcsp/products/topics/businesscase/costs.html>
- <sup>ii</sup> Liberty Mutual Research Institute Workplace Safety Index – 2017 <https://www.libertymutualgroup.com/about-lm/research-institute/communications/workplace-safety-index>
- <sup>iii</sup> ILO (International Labor Organization) <http://www.ilo.org/global/lang-en/index.htm>
- <sup>iv</sup> United States Department of Labor – Occupational safety and Health Administration <https://www.osha.gov/recordkeeping/>
- <sup>v</sup> Wikipedia, Herbert William Heinrich, [https://en.wikipedia.org/wiki/Herbert\\_William\\_Heinrich](https://en.wikipedia.org/wiki/Herbert_William_Heinrich)
- <sup>vi</sup> EHS Today, “Dan Petersen: Why Safety is a People Problem”, Steve Minter Jan 01, 1997 [https://en.wikipedia.org/wiki/Herbert\\_William\\_Heinrich](https://en.wikipedia.org/wiki/Herbert_William_Heinrich) EHS Today,
- <sup>vii</sup> Health and Safety RESOURCE – Oregon OSHA – October-November 2016 Volume 49 online