Executive Summary

Executives are struggling: the global economic recovery is slow, workforces across Europe are aging, commodity prices are rising and the seemingly diametrically opposed pressures of increasing output and reducing overhead make it difficult to meet the bottom line. Among these grand challenges, safety can get overlooked. This is largely because the cost of an unsafe working environment does not manifest until an incident or accident; the direct benefits of investing in safety are rarely tangible. When this is viewed in light of the persistently high rate of injuries and fatal accidents in workplaces across Europe – 5,720 people die in the European Union as a consequence of work-related accidents every year¹ – it is clear that the cost is very significant, both directly and indirectly. This begs the question: Where are we going wrong?

To provide some clarity on this issue, senior leaders and managers of 300 leading companies were surveyed to detail their perception of workplace safety and their implementation strategy. Interestingly, it was found that the problem lies not in the lack of attention to safety, nor even a lack of will to improve safety. Indeed, the importance of safety and its integral relevance to stronger business performance is well understood overall and reflected in a general lack of complacency, but there are gaps in implementation, likely since safety is mostly motivated by concern over image and considered a function of compliance. This outlook translates into an aversion of accountability for safety and the absence of clear frameworks for implementing safety in workplaces throughout Europe. Such weaknesses have the potential to infect the safety management system, decreasing overall efficacy and manifesting in a consistently high frequency of incidents or accidents.

¹ These figures were obtained from Eurostat. The data set provides statistics up to 2007.
Introduction
While over the last decade there has been a positive trend in the workplace fatality frequency rate across Europe – from 3.6 deaths per 100,000 workers in 1996 to 2.1 in 2007 - thousands of Europeans continue to die in the workplace every year. Thousands more suffer injuries or ailments caused by on-the-job accidents or incidents. For every person killed, injured or disabled, countless others are adversely affected: families, friends and caregivers often experience psychological, physical or economic effects. Beyond this, the direct and indirect costs to employers and society in general can be substantial.

Such injuries and fatality rates cannot be attributed to a single cause, but rather, a complex web of confluents factors – demographic, political, fiscal, social and structural in nature – that are quickly changing the context in which companies operate. For instance, contractors, part-time workers and migrants are increasingly utilized and may not be familiar with typical safety standards and procedures. Further, new technologies are changing the nature of the working environment. Such factors, among a multitude of others, have forced many companies to adapt their safety management systems. Across Europe, considerable efforts have been made to evolve in concert with this shifting context.

As a means of assessing the main drivers for the persistence of accidents and incidents in spite of such efforts, DuPont Sustainable Solutions – a DuPont consultancy business – has commissioned a study on the perception of safety among mid- to senior-level managers of leading companies in six major European economies. This paper will review the data collected in the survey, and ultimately shine a light on the strategic value that business leaders attribute to safety. Further, the paper will discuss the progress that business leaders have made thus far and what the focus should be in the future to cultivate a robust safety culture within their workplaces.

Safety and Profitability – Mutually Beneficial or Mutually Exclusive?
As one interviewee stated, “companies are created to make good business; the rest comes afterwards. Safety is a good thing, but of course it comes after profitability.” Indeed, it sounds as though leaders believe that companies cannot ensure the safety of their workforce without being profitable, can they?

The underlying connotation in this statement - that safety and profitability operate independently of one another - infers that improved safety does not lead to more profit, nor does higher profit lead to improved safety. However, experts agree that improved safety contributes to profitability in a myriad of ways – increased emotional and physical investment of employees, reduced employee turnover and improved productivity are a natural result. The participants of this survey agree – 95% of respondents feel as though improved safety leads to better business performance. Indeed, the results seem to indicate that the importance of safety and its integral relevance to stronger business performance is well understood by senior leaders. But then, why is this not translated into less accidents and injuries?

The survey provides some important insights into this matter, particularly as it pertains to the strategic priority allocated to safety. When asked to reveal the top three corporate strategic priorities, without prompting, the great majority of participants identified increased productivity, improved quality and cost reduction. Less than half of respondents considered workplace safety to be a top strategic priority. Only when prompted was workplace safety cited above all others (see Table 1). This discrepancy indicates that safety is not at the fore of the mind of business leaders; it is forgotten, unless prompted, instead of being recognized as a core value that is fully integrated into corporate policy - one that drives business decisions.

While over the last decade there has been a positive trend in the workplace fatality frequency rate across Europe – from 3.6 deaths per 100,000 workers in 1996 to 2.1 in 2007 - thousands of Europeans continue to die in the workplace every year.

\(^2\) Eurostat figures


\(^4\) For the purposes of this paper, safety culture is defined as the product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that determine the commitment to, and style and proficiency of an organisation’s health and safety management.

\(^5\) A report by Goldman Sachs found that companies that did not adequately manage workplace safety and health performed worse financially than those who did from November 2004 to October 2007 (“Goldman Sachs JBWere Finds Valuation Links in Workplace Safety and Health Data,” Goldman Sachs JBWere Group, October 2007). This portal is further supported by a study entitled “A Data-Based Evaluation of the Relationship between Occupational Safety and Operating Performance” (Journal of Safety Research Vol. 4, No. 1, Spring 2007) as well as by the American Society of Safety Engineers, who state that “there is a direct positive correlation between investment in safety...and its subsequent return on investment” (White Paper on Returns on Safety Investment, American Society of Safety Engineers, June 2002).

\(^6\) Within the context of this survey, “prompted” refers to the provision of several possible answers to elicit a response. When “unprompted,” respondents provided the answers themselves, without any suggestion from the survey provider.
While this distinction may at first glance seem unimportant, such attitudes can easily resonate through the organization, manifesting in the sidelining of safety. This likely occurs because the cost of safety (or non-safety) is hard to calculate - it is often difficult for business leaders to determine how much a company should be spending on safety. In fact, only a third of respondents indicated that their company measures the cost of safety. Moreover, when a company experiences a length of time without incident or injury, leaders can blissfully ignore the cost of non-safety. Such complacency was depicted in a statement made by one participant: when asked whether he was satisfied with his company’s investment in safety performance, he said “a lot of effort has been made; we are good at this point”. This sentiment was also expressed by like-minded companies who reported that they expect future investment in safety – both in terms of time and money – to either stay the same or even decrease. One senior leader interviewed cautioned against this, though, saying, “if we consider the cost of non-safety, we will realize how little it costs to practice safety.” Not surprisingly, those who expressed a complacent attitude generally had a lower benchmarking score across multiple criteria related to safety culture than those who recognize the cost of safety and invest accordingly. In other words, when leaders are complacent, the quality and effectiveness of the company’s safety culture can be adversely affected.

Considering that such complacency and inattention can easily cascade through a company, and thus influence the level of attention allocated to safety by each individual employee, the motivation behind implementing measures to improve safety must be considered. After all, if employees are motivated to implement safety, this tends to translate into improved safety performance. Unsurprisingly, the great majority of participants believed that compliance with legislation and the maintenance of corporate image are the main drivers of investment in workplace safety. In addition, only very few mentioned that improved safety would improve quality, increase productivity or reduce cost. This further confirms the aforementioned conclusion that few believe that the benefits of improved safety translate into better business performance. Beyond this, for those that work on the shop floor, compliance with legislation and corporate image are not very inspirational, and thus do not serve as strong drivers for safety performance improvement. In such a context, safety can be easily sidelined, as it is forced to compete with other business drivers for both funding and attention, often to its detriment.

Overall, senior leaders do understand the importance of safety, the benefits of safety in improving business performance, as well as the overall importance given to safety relative to other performance drivers - at least when safety was discussed directly. However, there was no organic confirmation of the importance of safety, as shown by the lack of verbiage given to safety when unprompted. This is further validated by the un-inspirational nature of the investment drivers for safety. Because of this, it appears as though senior leaders are less genuine when speaking about the belief that safety and profitability are intrinsically linked.
disparity: the farther northeast you go (Poland and Germany), the more likely it was that respondents reported that injuries were inevitable. This may correspond with industry results, in that companies in the manufacturing sectors (more prevalent in the North) were more likely to say that injuries were inevitable, while in the construction sector (more prevalent in the South), the opposite was true. Could this distinction be because of demographic or cultural factors? Despite these variations, only about half of all participants believed that injuries were inevitable.

Within these companies, a given number of injuries or accidents is apparently widely accepted; senior leaders do not communicate otherwise. The result: employees are less inclined to take learnings from an incident or think twice about an unsafe behaviour, greatly increasing the probability of an incident.

Aside from safety values, are senior leaders able to translate other verbal commitments into action? When asked directly about this, an average of one-third of respondents reported that their leaders are unsuccessful in doing so. Those respondents in Germany and France were found to be more critical on this issue. While most of these respondents spoke highly of their leaders’ commitment to safety, less than one-third of senior leaders participated in meetings about safety – a powerful means through which to demonstrate dedication and involvement. Even more shocking is that only one-fifth were thought to have made a decision based on its effects on safety.

Table 3: % of Respondents who Believe that Senior Leaders Adequately Communicate Their Commitment to Safety

<table>
<thead>
<tr>
<th></th>
<th>Communicate</th>
<th>Do Not Communicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents</td>
<td>22%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Less Words, More Action

Indeed, a clear commitment to safety, expressed both in words and actions, is often viewed as the cornerstone of a safety management system. However, this study has found that, despite no absence of verbal commitment to safety, leaders are less likely to translate words into specific actions to improve safety performance.

One facet of this disconnect pertains to corporate safety values: while the vast majority of respondents noted that their company had specific safety values – a platform that allows leaders to communicate what they expect from employees in terms of safety – this commitment is often rather shallow. Among these is the belief that all injuries can be prevented. When asked whether they believed if all injuries could be prevented, respondents were quite divided (see Table 4). Interestingly, there was a great geographic

Table 4: % of Respondents who Believe that All Injuries are Preventable

<table>
<thead>
<tr>
<th>Country</th>
<th>Preventable</th>
<th>Not Preventable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>96%</td>
<td>4%</td>
</tr>
<tr>
<td>Portugal</td>
<td>83%</td>
<td>18%</td>
</tr>
<tr>
<td>Italy</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>France</td>
<td>46%</td>
<td>54%</td>
</tr>
<tr>
<td>Germany</td>
<td>34%</td>
<td>66%</td>
</tr>
<tr>
<td>Poland</td>
<td>16%</td>
<td>84%</td>
</tr>
</tbody>
</table>

Based on 299 responses
The chasm between words and actions was further demonstrated when participants were to provide details pertaining to their safety management system. As shown in Table 5, there is a gap between verbal commitment – the setting of high standards – and more actionable items, such as the setting of performance targets and investment. Startlingly, the respondents who rated their companies lower in all categories than those in other job functions were HSE professionals. Typically, this group serves as both advocates for and enforcers of safety policy. Therefore, when they express a rather low opinion of the current state of the safety management system, it is evident that there is a lack of leadership action. Indeed, it is leaders, not enforcers, who drive improvement. Another anomaly emerged here as well: those in the construction industry were much more likely to be negative about leadership actions. Interestingly, there was little overlap with the low opinion of HSE professionals.

Aside from this, one of the most effective means of improving the safety context within a company is to take action – proactively. The data suggests that some proactive initiatives do take place, but not often enough. While it is shown in Table 6 that a number of different activities and exchanges take place, upon closer inspection, these are often not very frequent. For example, only half of the participants reported that their companies conduct safety audits more than once a month. These audits, as a powerful instructional tool, provide both a “teachable moment” within the operating environment as well as an opportunity to reinforce the importance of safety. They seem quite under-utilized. Furthermore, it was found that training is also lacking: only about half of companies report more than 10 training hours per annum. When considered in light of the rapidly shifting European workforce as well as the rate by which technology evolves, 10 hours of training per annum seems insufficient. Moreover, there seems to be quite a missed opportunity concerning the level to which incidents are investigated. While almost all companies reported that they investigate incidents after occurrence, only half investigate near misses - a proactive form of incident investigation. Indeed, near misses are one of the best means by which companies can identify potential problems and identify targeted solutions to prevent future accidents of a similar manner. Luck may save an individual the first time, but it may not the next time.

In sum, it is quite clear that when given the opportunity to act on their verbal commitment, many leaders fall short. Such a lack of clear, focused leadership is detrimental, reducing efficacy of the safety management system. Senior leaders have the power, the legitimacy and the duty to create, codify, coordinate and cultivate a strong, effective safety management system. However, this only occurs when verbal commitment is acted upon. And yet, the data suggests that such visible leadership is not widespread. In the absence of this, leaders are unable to influence the level of commitment to safety held by individual employees. If leaders cannot ensure commitment to safety, who will?

<table>
<thead>
<tr>
<th>Table 5:</th>
<th>Actions Taken by Senior Leaders to Show Commitment to Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Respondents</td>
<td>83%</td>
</tr>
</tbody>
</table>

Table 6: Use of Proactive Safety Measures

- Safety is audited more than once a week: 56% Yes, 56% No
- There are more than 20 hours of training per year: 54% Yes, 46% No
- There are safety meetings at least once a month: 64% Yes, 36% No
- There are ongoing discussions about safety: 92% Yes, 9% No

Based on 299 responses
As it turns out, the concept of “controlling safety performance” is quite complex; to be effective, leaders must construct a safety management system that is inclusive and fully integrated in the corporate structure of the company. While most respondents seem relatively satisfied with safety structures of their company, there is a clear aversion to accountability, which can erode effectiveness of the safety structure.

Many of the respondents agree that a key element of developing an effective safety infrastructure is the empowerment to enforce or reinforce safety within the workplace. This is evidenced by the wide agreement concerning whether or not they would find it strange to receive a comment from a coworker about working unsafely: 92% said they would not find such a comment strange. When asked whether feeling empowered to stop operations to prevent injuries, though, the percentage that agree is lower: 82%. Both of these figures are surprisingly high, especially in light of numerous field evaluations that have been conducted on the topic of responsibility and accountability for safety.

Table 7:
Accountability: Job Function Cited by Respondents as Accountable for Safety Performance

<table>
<thead>
<tr>
<th>Job Function</th>
<th>Accountable for Safety Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSE</td>
<td>33%</td>
</tr>
<tr>
<td>Line Manager</td>
<td>26%</td>
</tr>
<tr>
<td>Senior Management</td>
<td>32%</td>
</tr>
<tr>
<td>Human Resources</td>
<td>9%</td>
</tr>
</tbody>
</table>

Based on 269 respondents

Given the almost implausible amount of praise given to the safety infrastructure, it was surprising to discover that there was not much agreement among respondents about which department or person is accountable for safety performance. This is especially enlightening when the results for responsibility are compared to those for accountability (see Table 7): the vast majority feels responsible for safety, but not accountable. Only 25% of people felt as though they were accountable for the safety of both themselves and others. The other 75% said it someone else “should be blamed” if an accident or injury occurs. The group most likely to accept personal accountability is, not surprisingly HSE professionals. However, this is not by much: only 41% of HSE professionals feel accountable. A contradiction emerges here as well – 30% of companies delegate authority to HSE departments, and yet, of these companies, less than half reported that HSE departments would actually be accountable for safety.

In addition to empowerment, leaders must be able to develop an integrated human infrastructure for safety. To this point, the vast majority of participants indicated that they feel as though the responsibility (not accountability) for safety is clearly allocated somewhere within the structure of their company, be it line managers or otherwise. According to the results, safety committees consisting of employees of all levels are common, and driven by management of all levels to formulate safety strategy. Only a minority delegate responsibility to HSE departments – one in three companies. Further, they largely agree that there are sufficient resources and staff to ensure safety within the workplace. HSE professionals were the least likely to agree with this though. Another notable exception is that in France, almost half of respondents reported that resources and staff were lacking. This is reflected in a higher level of dissatisfaction with the company’s safety performance within the country as well.

Table 7:
Responsibility: % of Respondents Feeling Personal Responsibility for Safety Performance

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>% of Respondents Feeling Personal Responsibility for Safety Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personally Responsible</td>
<td>7%</td>
</tr>
<tr>
<td>Not Personally Responsible</td>
<td>93%</td>
</tr>
</tbody>
</table>

Based on 269 respondents

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In other words, more than half the HSE departments are considered as the experts on safety within the company, but they have no accountability for safety. This lack of clarity indicates that the structural element of safety management is not as clear as respondents may suggest, as aforementioned. Further, this gap shows that the appropriate time and effort required to fully develop the safety infrastructure has not been invested.

While most seem to be content with the way safety is organized in their company, the details are unclear and invident. Respondents accepted responsibility, but there was an aversion to accountability – no one wanted to be blamed for poor safety performance. Could this be basic human nature? Quite likely. However, it is clear that unless accountability is clearly defined and allocated by leaders, no one will want to be accountable. In the absence of desire for accountability, leaders have an undebatable role: they should define accountability clearly. The data suggests that not enough are doing so, nor are they pursuing means by which to empower employees at all levels to act safely.

Reinforcement mechanisms are often considered to be among the most important tools by which to ensure safety within the workplace. When pressed, however, few respondents could say that their company utilizes reinforcement mechanisms for safety performance such as goal-setting, performance tracking and incentivization of safety. Whether at an individual, departmental or company level, these mechanisms are neither comprehensive nor consistent.

When asked whether employees had specific, individualized goals for safety, almost one in five companies reported that there were none. Without goals, employees have no benchmark against which to compare safety performance – they may accept a high frequency rate as normal simply because it has been constant over a number of years. Further, it is difficult for employees to improve without specific goals towards which to orient themselves.

A natural extension of goal-setting is monitoring. One powerful monitoring tool available to companies is the measurement of leading and lagging indicators. By measuring both indicators, companies can gain valuable insight into what actions they should take, both preventative (proactive) and responsive (reactive). As shown in Table 9, only 37% of companies use both indicators. Even when they do, few track more than two or three.

Upon looking deeper into the level to which leading indicators are analyzed, some discrepancies began to emerge between information reported on specific actions; the lack of tracking brings into doubt the level to which companies pursue specific actions such as training, safety audits and near misses. Indeed, as it concerns leading indicators, the key performance indicator (KPI) that was most tracked was the total number of safety audits. However the results were not convincing: where 279 respondents reported that they conducted safety audits, only 30% tracked the number of audits that took place. A similar trend takes place with training: 259 respondents report that training takes place, but only 22% keep track of how many trainings took place. Further, 146 reported that they investigate near misses, but only 43% of those

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**Table 8:**

<table>
<thead>
<tr>
<th>% of Companies with Safety Targets</th>
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<tbody>
<tr>
<td>Spain</td>
</tr>
<tr>
<td>Portugal</td>
</tr>
<tr>
<td>Poland</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>France</td>
</tr>
<tr>
<td>Italy</td>
</tr>
</tbody>
</table>

**Table 9:** Percentage of Companies Using KPIs

<table>
<thead>
<tr>
<th>% of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both</td>
</tr>
<tr>
<td>Just Lagging</td>
</tr>
<tr>
<td>Neither</td>
</tr>
<tr>
<td>Don’t Know</td>
</tr>
<tr>
<td>Just Leading</td>
</tr>
</tbody>
</table>

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9 Leading indicators signal a future event, while lagging indicators follow an event.
track how often this is done. Such figures cast doubt on the level to which trainings, audits, and near misses actually take place, or at the very least, the resolve of companies as it concerns reinforcement.

Beyond this, the study has also found that the tracking of KPIs is less prevalent than one might think. Indeed, 37% of companies either do not use, or are not aware of the use of KPIs within their company. This is particularly astonishing since the tracking of key performance indicators is perhaps the most effective means by which to identify strengths and weaknesses of the safety management system. Even more shocking is that even with HSE professionals, one in four does not measure safety performance. Beyond this, not one participant, including HSE professionals, could (or would in three cases) provide a statistic about their company’s safety performance. When considering the audience – senior executives, safety professionals, plant directors, human resource managers – this is quite indicative of the lack of communication or awareness of safety performance within the company. This further begs the question posed above: how much monitoring is actually taking place? Effectively, without measurement, it impossible to set goals or targets, to decide upon the appropriate corrective actions, and to improve safety performance.

Other tools also exist to monitor, and thereby improve, individual safety performance. One of the more effective tools is to incentivize safety by linking safety performance to pay, and monitoring progress. However, less than half of companies surveyed incentivize safety in such a manner. Further, it was found that these are the only companies that perform any sort of individual safety performance tracking at all. Interestingly, the linking of pay to safety performance is far more likely to occur in the southern countries than those in the North.

While there are weaknesses throughout the “value chain” of safety management, the lack of monitoring is perhaps the most indicative of a low level of commitment to actualizing safety. Without monitoring on either a statistical or human level, it is impossible for leaders to ascertain the efficacy of the safety management system, assess risk properly, hold employees accountable for performance or even define an improvement plan. Therefore, at present there is little ability to isolate weak points, build on strengths and motivate employees to work safely.
Conclusion
A safety management system is inherently complex; it must be concurrently psychological and mechanical in nature, broad and narrow in scope, rigid and flexible in structure. Because of this, a complex web of interlocking components must be constructed; these components must be customized, encompassing demographic, political, fiscal, social and structural aspects of the plant site. This is particularly challenging giving the pace of technological change and shifting demographic contexts within the workplace. For these reasons, companies must remain vigilant, maintaining or increasing investment – both financial and human – in safety, as needed.

But where are companies going wrong? The data suggests that there is a conceptual “breakdown” due to a lack of overall leadership commitment. While it is clear that the importance of safety is well understood, it is rarely a top concern due to less than inspiring drivers – compliance and corporate image. Most importantly, the data suggests that some leaders do not translate their words into actions. This manifests itself in various ways: a lack of clarity about accountability and superficial use of measurement for reinforcement, among others. These circumstances are quite widespread: we, as safety consultants, see these exact problems in our client organizations as well. Ultimately, we have seen that these weaknesses have the potential to infect the safety management system, decreasing overall efficacy and manifesting in a consistently high frequency of incidents or accidents.

When viewed as a whole, it is clear that most companies are simply not applying themselves fully. Some leaders do not seem to appreciate the impact of managerial and human factors on the outcome of safety performance. Even with the most state-of-the-art technical safety regulations, companies will continue to suffer incidents without a strong human focus in the management system. Indeed, the basic elements may be in place, but without continued impetus and commitment, safety performance stagnates. The lack of a coordinated, uncompromising approach to safety means that injuries and fatalities will continue to plague companies across Europe, hampering the ability of companies to attain their bottom line, and, in severe cases, eroding the right to operate. How long can this continue? By increasing the level of felt leadership, solidifying a clear management and accountability infrastructure, as well as implementing comprehensive monitoring mechanisms, companies have much to gain.
I. Structure

In order to understand both the high-level strategic perspective on workplace safety, as well as the viewpoints of those that implement the safety strategy, the market study was divided into two sections, one qualitative and one quantitative.

Ten qualitative interviews were conducted with senior leadership of companies that lead their relative market segments. Two interviews were conducted in each country to ensure that perspectives from each region were captured. Variation of industry was also factored into the distribution, with the companies representing each of the industry segments included within the survey. Each of the interviews, conducted via telephone, were conducted in the native language of the interviewee, and lasted approximately one hour.

The quantitative interviews were conducted with 299 mid- to senior-level managers. The interviews, conducted via telephone, were approximately thirty minutes in length and conducted in the native language. Fifteen of the interviewees were selected to participate in a follow-up discussion, during which they provided more detailed information concerning each of their answers.

2. Scope

To understand the strategic relevance of safety, as well as the degree to which this strategy was implemented, questions focused on the following topics: leadership for safety, organizational structure, processes and actions, measurement of results and the future of safety within the companies. In doing so, it is possible to ascertain whether a safety culture exists within the company, as well as its relative level of efficacy and maturity. The topics included within each section are as follows:

- Leadership - the attitudes held by senior leaders within the company, as well as the expression of safety culture and the extent to which commitment is displayed
- Structure - responsibility, accountability and the human infrastructure within the company
- Processes and Actions - the frequency and nature of communication, training, audits and investigations
- Measurement of results - the choice and use of key performance indicators to assess progress toward safety goals
- Future - the focus or investment patterns, particularly whether these would be maintained, increased, or decreased in the future.

3. Sample

Each of the companies surveyed had a minimum of 2,500 employees, with 1,000 employees on-site. The industry segments included oil & gas, energy & utilities, 1st and 2nd tier automotive, steel production and processing, refining, food production and transportation. Additionally, the interviewees held mid- to senior-level positions in operations, engineering, logistics, human resources or health, safety and environment (HS&E). A graphic representation of the demographics of participating companies can be found in Appendix II.

Appendix II: Number of Companies by Country and Industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>France</th>
<th>Germany</th>
<th>Italy</th>
<th>Poland</th>
<th>Portugal</th>
<th>Spain</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>36</td>
</tr>
<tr>
<td>Construction</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>Energy and Utilities</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>27</td>
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<tr>
<td>Food and Beverage</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>23</td>
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<tr>
<td>Industrial Manufacturing</td>
<td>18</td>
<td>20</td>
<td>30</td>
<td>18</td>
<td>11</td>
<td>15</td>
<td>112</td>
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<tr>
<td>Logistics</td>
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<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>16</td>
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<td>Steel</td>
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<td>2</td>
<td>1</td>
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<td>4</td>
<td>17</td>
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<tr>
<td>Transport</td>
<td>1</td>
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<td>5</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>51</td>
<td>50</td>
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Distribution of Participants by Job Function by Country

- Spain
- Portugal
- Poland
- Italy
- Germany
- France

Distribution of Participants by Job Function by Industry

- Automotive
- Construction
- Energy & Utilities
- Food & Beverage
- Hardware/Equipment
- Industrial/Manufacturing
- Logistics
- Oil & Gas
- Steel
- Transport
- Other
### Appendix III: Partial List of Participating Companies

- A2A S.p.A.
- Acciaierie Grigoli S.p.A.
- Adda Abbigliamento Professionale S.p.A.
- Air Products Sp. z o.o.
- Alcatel - Lucent Portugal, S.A.
- Alcatellucent GmbH
- Alenia Aeronautica
- Alfred Kärcher GmbH & Co. Kg
- Algeco
- Alitalia – Linee Aeree italiane S.p.A.
- Amorim
- Arcelor Huta Warszawa Sp. z o.o.
- Arcelor SSC España SA
- Arkema GmbH Hauptheverwaltung Düsseldorf
- Arnold & Richter Cintechnik GmbH & Co. Betriebs Kg
- Astro S.r.l. Realizzazioni Plastiche Civili e Industriali
- Autoliv KLE SA
- Automóviles Citroën España, S.A.
- Avon Cosmetics S.r.l.
- Balneario y Aguas de Solan de Cabras SL.
- Barraqueiro SGPS S.A
- Baviera Comercio de Automoveis SA
- Bayer Portugal S.A.
- Bercro S.p.A.
- Beretta Pietro S.P.A.
- Berco S.p.A.
- Bostik, Inc.
- Bourbon
- Brembo
- Butagaz
- Carbone Lorraine (now Mersen)
- Caverion GmbH
- Cegelec
- Chemial S.p.A.
- Cimpor Inversiones SA
- Cinetec Industries S.r.l.
- Citti Märkte GmbH & Co. KG
- Clemassy S.A.
- CNI Italia S.r.l.
- Comer S.p.A.
- Companhia Carris de Ferro de Lisboa, S.A.
- DB Energie GmbH
- DB Schenker Rail Deutschland AG
- Dahn + Sölne GmbH & Co. Kg
- Deutsche Bahn
- Deutz AG
- Dillinger Hütte
- DIW Instandhaltung Ltd. & Co. KG
- Ducros Express
- Ecofilm S.r.l.
- Edeka-handelsgesellschaft Hessenring mbH
- EDP
- Electrolux
- Elektrotechnische Fabrik
- Entremont Alliance
- ERG Spa
- Errettre S.r.l.
- Eurospartame
- Euromatrce France
- F.M. Logistic
- FAG Kugelfischer Georg Schäfer AG
- Fager Ederlan S. Coop.
- Feaivey Transport Italia S.p.A.
- Fincantieri Cantiere Navali Italiani S.p.A. – Ufficio di Roma
- Fritz Winter Eisengießerei GmbH & Co. KG
- FTE automotive GmbH
- Galp Energia
- Gelizt AG
- Gerreseher Boleslawiec SA
- Grimmie Landmaschinenfabrik GmbH & Co. Kg
- Heppner Société de Transports
- Heufiez SA
- Hochtief Construction AG
- Hochtief Polska Sp. z o.o.
- Holcim España SA
- Höffmann Industrietechnik GmbH
- Hügel GmbH & Co. Kg
- Iberdrola Distribución
- ILVA
- IMA S.p.A.
- Inces Manufacturing Italia S.p.A.
- IVECO España
- Kirchhoff Polska Sp. z o.o.
- Kleb GmbH
- Knoll Maschinenbau GmbH
- Kolbus GmbH & Co. Kg
- Kostal Italy S.R.L.
- Krehnke + Nagel
- KVVK – Karlsruher Versorgungs-Verkehrs- und Hafen GmbH
- Lear Corporation Italia Srl.
- Liebherr-Mischtechnik GmbH
- Lincoln Electric Bester SA
- Linhardt Italia S.r.l.
- Luigi Lavazza S.p.A.
- Luxottica
- M.A.G.A. S.r.l.
- M.G. Mini Gears S.p.A.
- Man Turbo AG
- Mann-Hummel Iberica SA
- Maschinenbaupressen Binder GmbH & Co. Kg
- Max Bögl Bauunternehmen GmbH & Co. Kg
- Medol
- Mondo S.p.A.
- Montuppet
- Nestlé Portugal
- Nuova Januaplast S.r.l.
- OMG ‘Turra Sr.
- Pantrico Donuts Canarias SA
- Parmastr
- Paulsstr
- Peri GmbH
- Peter Fross GmbH & Co. KG Bauunternehmung
- PGINIG SA
- Phoenix Contact
- Pirelli Neumaticos SA
- Pojazdy Szynowne PESA
- Police S.A.
- Porcelanosa SA
- RATTO Handel GmbH & Co. KG
- Renolit AG
- Roca, SA
- Sabic Innovative Plastics España S.C.P.A.
- Saint-Gobain Building Distribution Deutschland GmbH
- Saint-Gobain Cristaleria SA
- Salvador Caetano – IMVT, SA
- Salzigter AG
- Same Deutz-Fahr Group
- Saras
- Schiedel GmbH & Co. KG
- Schneider Electric Españ SA
- Selena Communications S.p.A.
- Semapa
- SIG Combibloc Systems GmbH
- Siltronic AG
- SKF Industrie, S.p.A.
- Somincor
- Sonae Industria
- Sopinal
- Spoldzielnia Uslugowa Piast w legnicy
- Sumol+Compal
- SWM Versorgungs GmbH
- Total Deutschland GmbH
- TRW Airbag Systems GmbH
- Niederlastung Laage
- TS Technologie & Service GmbH
- Türbogas
- Tyco Electronics AMP España SA Maxima Technologies S.L.
- Vereinigte Schmirgel- und Maschinen- Fabriken AG
- Vinavil S.p.A.
- Visabeira
- Wielkopolska Sp. z o.o.
- WIKA Alexander Wiegand GmbH & Co.Kg
- Wismut Gesellschaft mit Beschränkter Haftung
- ZF Sachs AG
- ZF Services GmbH

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8 This list includes the names of companies that agreed to attribute their name to the study. The other companies remained anonymous.

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