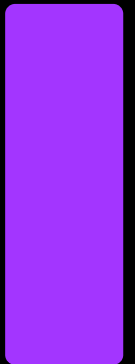




IDENTIFYING HIGH RISK INDIVIDUALS IN MANUFACTURING OPERATIONS

with the SafetyDNA® assessment



Overview

When one considers the overall costs of workplace injuries in the U.S., the numbers are quite staggering. According to the National Safety Council (NSC - <https://injuryfacts.nsc.org/work/costs/work-injury-costs/>), the average total cost of a medically consulted work injury in 2017 was \$39,000. Furthermore there were 104 million lost days due to injury in the same year. These figures contribute to a total cost of over \$161 billion associated with work injuries in 2017. Such numbers tell us that despite all the safety-related improvements and investments that organizations make each year, work-related injuries remain all too commonplace and come with enormous costs to employers.

Employees who
scored in the top
20%
on the assessment
experienced no injuries

Organizations typically try to prevent injuries through traditional methods, such as increased safety training, additional policies and procedures, and the latest personal protective equipment (PPE). While these foundational approaches have shown to be effective, they have several limitations and can only go so far, in part because they do not take into account the vast differences in characteristics and capabilities across individuals. Everyone is unique not only in what they know, but in terms of the stable psychological traits, abilities, and behavioral tendencies that define who they are over time. These individual characteristics play an important role in how each employee processes information, responds to hazards, and applies training information in work situations.

Our research in industrial and high-hazard work environments has repeatedly found that there are critical psychological factors that are highly associated with safety behaviors and injuries – we refer to these factors as a person's unique "**SafetyDNA**." These factors – Control, Awareness, Rules, and Caution, can be reliably and accurately measured using validated psychometric

assessment tools such as Talogy's online **SafetyDNA**[®] assessment. Individuals' results can then be compared to their historical safety metrics in order to assess how well the assessment predicts incident and injury involvement. In this paper, we highlight the results of new field studies we conducted at two companies in very different industries.

Control, Awareness,
Rules, and Caution

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Study one

Study 1 was conducted at a global manufacturer of chemicals and advanced materials located in the U.S. The **SafetyDNA** assessment was completed by 226 existing hourly employees who worked in either Production or Skilled Trades jobs at one of these U.S. facilities. The assessment, which measured each employee's personal **SafetyDNA** profile, was administered for research purposes, as part of a broader validation study. In addition to the assessment data, safety incident metrics (first aid and OSHA recordable injuries) for the previous 24 months were provided by the company for each employee who participated in the study. Results from the study showed that the employees' average **SafetyDNA** scores across the four factors were highly related to the number of safety incidents in which they were involved. In other words, individuals with the lowest average scores on the assessment were much more likely to have been injured at work compared to those with high scores. As illustrated in Figure 1, employees who scored in the bottom 20% on the assessment had a 10% likelihood of being injured on the job, compared to those who scored in the top 20%, who experienced no (0%) injuries during the same time frame. This amounts to employees with high scores being 10 times less likely to be injured on the job compared to those with low scores. There were no other notable or systematic differences between the groups in terms of experience, job type, or age, indicating that their **SafetyDNA** traits likely played a significant role in this injury rate difference.

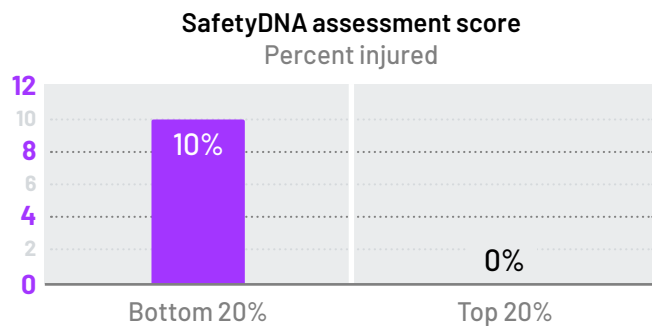


FIGURE 1:
Relationship between SafetyDNA scores and injury likelihood
Chemicals and advanced materials manufacturer

Conclusion

Taken together, these two sets of findings provide further support for the relationship between the **SafetyDNA** assessment and injury likelihood. Despite similar job experience, job type, age, and other factors, those who score low on the factors measured in the assessment tend to be significantly more at risk than others. Previous studies we have conducted have found even larger differences, with some individuals being anywhere from 4 to 11 times more likely to be injured on the job. As a result of these studies, both of these organizations continue to use a validated assessment that measures these safety factors as part of their pre-employment process for various shop-level and operator positions.

While workplace injuries are always the result of multiple complex factors, these results show that stable, individual traits play an important role as a precursor to these events. By measuring these traits and using the resulting data in a systematic manner at both the pre-employment stage as well as in a training and development context, organizations can help prevent injuries and improve safety, one person at a time. Taken together, these two sets of findings provide further support for the relationship between the **SafetyDNA** assessment and injury likelihood. Despite similar job experience, job type, age, and other factors, those who score low on the factors measured in the assessment tend to be significantly more at risk than others. Previous studies we have conducted have found even larger differences, with some individuals being anywhere from 4 to 11 times more likely to be injured on the job. As a result of these studies, both of these organizations continue to use a validated assessment that measures these safety factors as part of their pre-employment process for various shop-level and operator positions.

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Study two

In another recent study at a U.S.-based tools manufacturing company, the **SafetyDNA** assessment was administered to 137 hourly employees working in a variety of job families, including machine operators, maintenance technicians, and manufacturing team members. This company also provided us with safety incident data on these same individuals, including first aid, recordable, and lost-time injuries. The results indicated that **SafetyDNA** assessment scores were highly predictive of safety incident involvement, as shown below in Figure 2. Specifically, employees who scored in the bottom 20% on the assessment had a 16% likelihood of being injured on the job, compared to those who scored in the top 20%, who only had a 7% likelihood of sustaining an injury. Similar to the first study, there were no significant differences in experience, job type, or tenure between these two groups. These results mirrored the findings from Study 1, in that those with low average **SafetyDNA** scores were approximately twice as likely to sustain an injury on the job.

FIGURE 2:
Relationship between SafetyDNA scores and injury likelihood
Tool manufacturer

