

# Behavior-Based Safety 2.0:

## THE NEXT EVOLUTION

*The next evolution of behavior-based safety will come through the use of predictive analytics and observation intelligence.*

BY CHUCK PETTINGER

The study of occupational safety and health has been in existence for as long as there have been structured work environments. Hippocrates (460-377 BC), for example, wrote of the harmful effects of an unhealthy workplace on slaves, and Caesar (100-40 BC) was reported to have an officer in charge of the safety of his legions (Pease, 1985; Weaver, 1980).

Governments began to make an impact on the health and safety of workers through legislation like the 1880 Employers' Liability Act in England, and the OSH Act in the United States in 1970. The engineering field also had a strong influence on industrial safety through the work of such pioneers as William Haddon (father of automotive safety and PPE), Lillian Gilbreth (time and motion studies) and Hywel Murrell (the father of ergonomics). Even though organizations have used the teachings of these early safety pioneers, and have a plethora of rules/regulation and policy/procedures, employees still are getting hurt.

While there has been continued progress in EHS over the last 4 decades, many organizations have reached a plateau and want to move their safety cultures from great to world-class. These organizations have robust training and education and efficient and effective safety processes, yet they lack continuous safety progress required of a world-class organization. A great number of these organizations also use behav-





ior-based safety (BBS) to supplement their compliance-driven programs. Yet, workers still are getting hurt.

**BBS 1.0**

In response to injuries, many organizations now use an audit or inspection process to judge compliance with their rules, regulations, policies and procedures. It is possible, however, to follow all the rules and regulations and still perform risky behaviors. Thus, BBS focuses more on observable behaviors than on whether people are compliant with policies and procedures. A robust BBS process does not replace audits or inspections; it simply looks at safety from a coaching perspective.

Since the beginnings of BBS, many safety practitioners successfully have implemented a process that not only engages their employees, but also provides an abundance of observation intelligence. However, without a strong sustainability plan in place, many BBS processes enjoy a short-lived success. To continue the positive momentum (or resurrect a stale one), BBS practitioners need to take their BBS process to the next level; they need a safety step-change.

**BBS 2.0: CREATING A SAFETY STEP-CHANGE**

Many factors influence a safety culture. One effective way to improve the culture is to get the people closest to the risks to provide safety-related feedback to each other in a coaching manner, and then assess the collected information to identify systems that may facilitate risky behaviors. This employee engagement is at the heart of most BBS processes.

However, even with the best implementation, many processes struggle to maintain their momentum. This loss of momentum can be traced to many factors, like lack of leadership engagement, lack of resources for the BBS design team, not making use of the observation intelligence or, more typically, no sustainability plan. With all organizations asking for increases in efficiency and effectiveness, without the BBS practitioner providing a value proposition to their leadership or fellow employees, these processes

begin to lose their internal support. To “upgrade” your current BBS process to a newer, more effective version, don’t start from the beginning; evolve your process by using predictive analytics.

**A CASE FOR PREDICTIVE ANALYTICS**

With the mainstream use of smartphones, tablet computers, high-power networks and social networking, the safety practitioner has more access to technology than ever before. However, very few organizations take full advantage of this technological edge. This advantage especially is relevant to BBS processes that produce a large quantity of data.

A few leaders in the industry have begun using their observation intelligence through predictive analytics. Analytics is “the science of analysis.” By making full use of your BBS observations, you can begin using your data to tell a story about your safety culture. Through this analysis, businesses can start taking advantage of this intelligence to predict observation quality decline, safety process deficiencies and human error, and even can begin to predict where their next injury will occur.

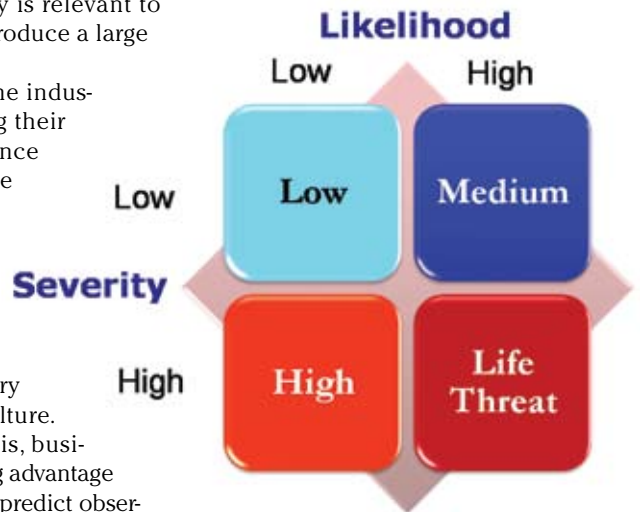
To make this step-change in your BBS process, organizations need to first, improve their observation technique by adding at-risk severity and tracking open issues; then, assess the quality of their observers; next, use mobile technology to improve efficiency and effectiveness of their observers; and finally, use technology to improve the predictive power of their observation intelligence.

**Step 1: Improve your BBS observation technique** – A typical BBS observation consists of two phases: the observation phase and the feedback phase. In the observation phase, employees record as many behaviors as they see, both safe and at-risk. Comments also are recorded to clarify what was observed and to provide the person observed with specific best practices,

concerns and/or recommendations.

To enhance this technique, observers also should track the severity of the observed risky behavior (i.e., low, medium, high and life-threatening). This severity measure typically is based on a simple risk matrix of severity by probability as seen in **Figure 1**. This criteria is essential for gathering as much “color” from the risky behaviors as possible. Because BBS processes typically have such a high rate of safe behaviors observed and very few at-

**FIGURE 1**



risk behaviors, it is crucial to gather as much detail about the risky behavior as possible.

The other observation technique that can be improved is to track open issues to closure. During the feedback phase, when the observer is coaching the employee, any issues that cannot be addressed on the spot or that require additional resources should be tracked as open issues. Once these issues are closed out, the BBS team can use it as an achievement metric: open issues closed per time period and open issues closed within 24 hours of being opened. These achievement metrics (or leading indicators) help demonstrate the value the team is bringing to the organization as well as to their fellow employees.

**Step 2: Track the quality of your observers** – To keep the saw sharpened, BBS teams should assess how well their ob-



**Look to the future – use BBS and predictive analytics to anticipate where your next injury may occur.**

servers are conducting observations. This “observer quality” metric can take many forms, but should track:

- *Participation:* Number of observations each observer is completing in relation to other observers.
- *Number safe:* Number of safe behaviors per observation.
- *Number at-risk:* Number of at-risk behaviors per observation.
- *Severity:* Percentage of the risky behaviors observed that are of medium severity and above.
- *Comments:* Number of at-risk behaviors with comments per observation.

Tracking the quality of your observers can give your BBS team insight into cultural issues, training opportunities and team performance. The examples listed here demonstrate one way to track observer quality through a star-based rating system. In this example, based on comparative analytics, employees’ observation characteristics can tell a story. In the first example, the observer has a three-star rating based on a high frequency of observations, high number of safe observations but very few risky behaviors with low severity. These quality metrics tell a story that may reflect reluctance to record risky behaviors, which could point to a cultural gap that needs addressing. On the other hand, this pattern may in-

dicade a team member not perceiving any value in performing observations and could be making up the data.

The second example also indicates a three-star observer. However, in this case, there is low participation and low safe observations yet high at-risk and severity. Again, using the predictive power of our data, this pattern tells a story that might point to a “fault-finder” or “ticket writer.” In other words, the only time the observer gets involved is when he or she sees a serious at-risk behavior, grabs a checklist and writes the employee up via the observation form. This can have a disastrous impact on the fact-finding, caring nature of a well-implemented BBS process. By using these quality analytics, the BBS practitioner can move beyond focusing on just percent safe and use the predictive power to identify cultural or training issues.

**Step 3:**  
**Embrace mobile technology** – With a reduction in price and the widespread adoption of smartphones and tablets, many organizations have an opportunity to achieve real-time safety intelligence through technology. As smartphones become the norm, many organizations have begun using this technology to track safety observations. Using smartphone apps, employees and managers now can

track their audits, inspections and BBS observations via their phones, sync their results and send out real-time alerts based on these results.

Some BBS processes suffer from “data lag,” where their completed observations collect dust as they sit in a pile waiting for someone to enter them into a spreadsheet. In the past, it was not uncommon for the BBS data to be 4-6 weeks behind. To take your BBS process to the next level, embrace technology to make your process more efficient and effective. At a minimum, consider scanning technology, which will allow you to turn your paper checklists into a digital format.

**Step 4:**  
**Predict where your next injury will occur** – Is it possible to use your observation intelligence to predict where your next injury will occur? Yes, it is – by using the correct predictive analytics. As organizations upgrade their BBS processes to version 2.0 through improved technique, improved quality and real-time data, they will be better equipped to use observation intelligence through analytics.

Today’s computers are increasing in capability and decreasing in price, and are far better able to detect patterns within our safety data than humans are able to detect in the common spreadsheet. Ideally, organizations should utilize leading and lagging indicators, paired with the power of modern analytics to help understand patterns and trends to ultimately identify where the next, most-likely incident could occur. With accuracy rates as high as 86 percent, predictive analytics help organizations save lives and work toward the ultimate goal of eliminating death on the job.

**EHS**

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