Behavioural Accident Prevention Process® Technology

The methodology known as behaviour-based safety (BBS) has been around for some years. As with all things that become popular, the name has come to mean different things, depending upon whom you ask. What is not disputed is that in certain forms and in the right configuration, the approach can produce exceptional results. Used along with good engineering and administrative controls, behaviour-based safety can be a powerful tool for achieving continuous improvement in safety performance.

This article outlines DEKRA's approach to employee-driven safety, the Behavioural Accident Prevention Process® (BAPP®) technology. BAPP safety is a flexible, systematic, and comprehensive method for improving workplace safety. It focuses on exposure upstream of injuries and is proven to produce sustainable results and meaningful employee engagement.
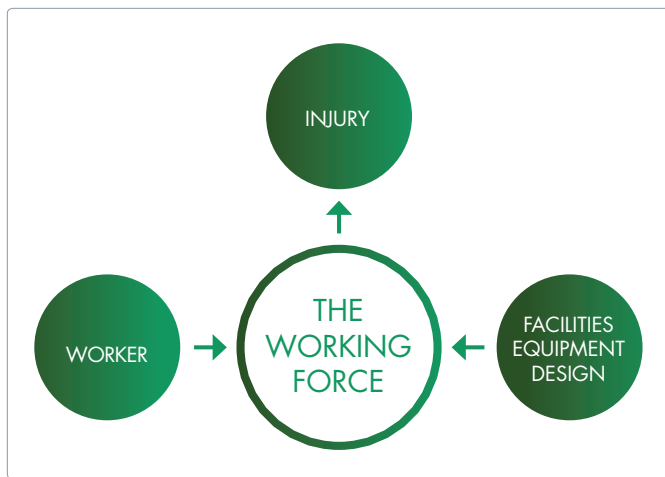
Figure 1. The Working Interface

Figure 2. The BAPP System Contains Four Key Elements

What Causes Injuries? Understanding the Working Interface

The primary activity of safety initiatives, whether at the site or corporate level, is to reduce the level of exposure that occurs in the workplace. All safety activities, mechanisms, programs, and measures are inherently linked to this fundamental task. Even with good measures in place, however, many companies still see that injuries continues to persist, sometimes inexplicably. This persistence results, in part, from a misunderstanding about what creates exposure and how safety performance occurs within the organisation.

It has been fairly common until somewhat recently to view incident causation as "either" the employee behaviour "or" equipment and facilities. This paradigm contains a false dichotomy, and has limited the scope (and consequently the reach) of safety efforts. Equipment doesn't simply malfunction independently of how it has been designed and maintained. Workers don't merely work unsafely, isolated from the system configuration. Rather, workers interact with technology (see Figure1). This interaction constitutes a system, which we call the working interface. This system has a multitude of variables influencing it, including facility and equipment design quality, the relevancy and adequacy of training, the quality of leadership on site, and the climate and culture of the workplace.

Behaviour-based safety (BBS) is concerned with assessing the working interface by using what people do—behaviour—as the starting point for improving the whole system in which people work. We look at how the work is done, not
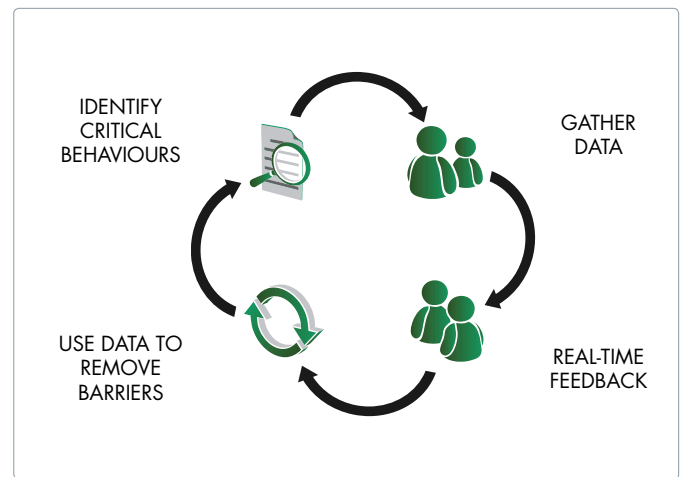
because the worker is to be blamed but because real safety improvement occurs through discovering how things actually occur in the workplace, not how they are "supposed" to be. This means identifying and defining, in operational terms, the critical interfaces associated with how the equipment is used or how procedures affect risk. Behaviour-based safety that focuses on the working interface allows organisations to pinpoint where they need to direct improvement resources in advance of any incident.

Four Key Elements

Behaviour-based safety or BBS is a mechanism for understanding, influencing, and changing the working interface. Since the approach first rose to prominence 20 years ago, "behaviour-based safety" has come to describe any effort that focuses some level of attention on safety-related behaviours. It's not unusual to hear people claim to have behaviour-based safety meetings or say that their incentive programs are behaviour-based. These activities, however, bear little resemblance to the BBS systems that studies have shown to produce robust and significant safety gains over the course of many years.

The foundational principle of BAPP technology is that safe work is made up of a complex interaction of a multitude of factors (DEKRA's Ongoing Studies, March 2001). A true BBS system contains four basic elements (Figure 2): Critical behaviour identification, definition, and communication; Data gathering (sampling or observations); Real-time feedback; and Using data to remove barriers to safe work.

Identify Critical Behaviours

In this step, a steering team reviews a representative selection of the site's incident reports looking for the behaviours critical to safe performance. It is common for the team to discover a set of 20-35 behaviours that is implicated in 90-95% of recent incidents. Wage-roll team members — who are most familiar with the daily risks of the job — will sometimes identify additional behaviours which may not be implicated in incident reports but which they know to be critical to worker safety. Committee members then define each of the identified behaviours in operational terms and categorise them for inclusion in a data sheet. Operational definitions might focus on areas such as pinch-points, line-of-fire, eyes-on-path, and 3-point-contact on ladders or stairs or scaffolding.

Gather Data

Trained observers use the data sheet to measure the level of exposure to risk in the workplace. The operational definitions not only provide an objective measure of safe performance, they help foster a new common vocabulary for safety. While many sites train supervisors in behaviour-based observation procedures, the observer corps at most sites is comprised largely of wage-roll personnel. They perform regular observations of their peers, after which they provide performance feedback.

Real-time Feedback

After gathering data, observers have informal discussions with their coworkers about the safe and at-risk behaviours they observed. The observer points out the places were the employee was performing safely (providing success feedback) and tries to discover the reasons behind any observed at-risk behaviours. The observer records co-worker suggestions (without recording the employee's name) and ideas about barriers to safe work. Data recorded in the observation is then analysed by computer software. Posted reports and charts of workgroup performance provide additional ongoing feedback.

Use Data to Remove Barriers

Perhaps most critical to improving the working interface, barrier removal uses observation data to target those areas where workers are exposed to risk. A cross-functional barrier removal team uses the observers' written comments to identify the number and kinds of remedies needed. Keeping in mind that there are three basic categories of
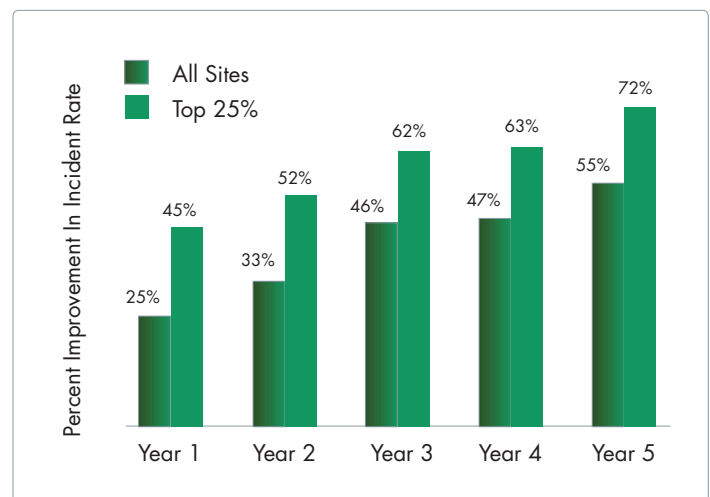

Figure 3. Five year results of BAPP technology for 153 client sites.

behaviour that make up the pool of exposure—enabled, non-enabled, and difficult—the barrier removal team can tailor interventions appropriately. In the case of enabled behaviours, (those that are easily within the control of the worker) the team may rely on ongoing feedback or training sessions to increase the occurrence of safe behaviour. In the case of non-enabled (impossible for the worker to perform) or difficult (requiring extra effort), the team will work with management to remove barriers in systems or equipment that are exposing workers to risk.

Roles for Every Level

The working interface is not an isolated system. An organisation's safety enabling systems, sustaining systems, culture, and leadership all influence the level of exposure at the working interface. For this reason, successful BBS initiatives engage all levels of the organisation in safety and in removing hazards.

Front-Line Employees

In many organisations, BAPP safety offers the first real opportunity for front-line employees to contribute to safety. Typically front-line employees are responsible for running the process, from conducting observations to running meetings to data analysis and supporting action plans where necessary. Successful organisations ensure that key individuals have adequate training for their role. This training is typically interaction skills and behaviour-based principles for observers and more specific time management and organisation skills for team facilitators.

Supervisors & Team Leaders

Supervisors have the most influence over day-to-day activities that affect performance outcomes. While some sites do allow supervisors to conduct observations, most have supervisors take a supporting role, providing work coverage so employees can conduct observations, and assisting in barrier removal action plans. Some organisations are providing supervisors and team leaders with training in performance management skills to help them work with employees to meet overall safety objectives.

Senior Leaders & Managers

Research shows that one of the most critical factors in the success of any safety initiative is leadership. Through what they choose to focus on and how they go about doing the things they do, leaders telegraph what is really important to the organisation. Typically not engaged in on-the-floor observations or barrier removal, senior leaders can still set the stage for BAPP safety success by fostering a healthy organisational culture. Site managers can get more directly involved by becoming process champions or by helping with action plans to remove barriers to safe behaviour. Many leaders and managers are also engaging in directed coaching that helps them leverage their actions for optimum effect throughout the organisation.

Planning, Assessment, Implementation, and Support

DEKRA professionals offer guidance at each stage of the BAPP safety implementation with a view to building the client company's internal resources for long-term sustainability. Implementation begins with the use of predictive assessment tools that diagnose organisational culture, strengths, and challenges, helping the client avoid pitfalls and build success from the outset. DEKRA assists with selecting a process facilitator, involving supervisors and managers, and managing upstream data. After the start up phase, DEKRA resources are available to offer support as the implementation matures, including report analysis training and data services, internet resources, sustainability reviews, and admission to DEKRA Users Conferences around the world.

Results

BAPP initiatives enjoy a long history of success. Figure 3 shows the results of the largest study ever conducted demonstrating the effectiveness of behaviour-based safety; however, the results are specific to DEKRA and BAPP safety and do not generalise to all employee-driven approaches. Based on a representative sample of 153 user sites, it shows that the average user site achieves a 25% improvement over baseline in the first year of its process, increasing to 55% improvement over baseline in the fifth year. The top 25% of users achieve better than 45% improvement over baseline in the first year, increasing to 72% in the fifth.

DEKRA Organisational & Process Safety

DEKRA Organisational and Process Safety are a behavioural change and process safety consultancy company. Working in collaboration with our clients, our approach is to assess the process safety and influence the safety culture with the aim of 'making a difference´.

In terms of behavioural change, we deliver the skills, methods, and motivation to change leadership attitudes, behaviours and decision-making among employees; supporting our clients in creating a culture of care and measurable sustainable improvement of safety outcomes is our goal.

The breadth and depth of expertise in process safety makes us globally recognised specialists and trusted advisors. We help our clients to understand and evaluate their risks, and work together to develop pragmatic solutions. Our value-adding and practical approach integrates specialist process safety management, engineering and testing. We seek to educate and grow client competence to provide sustainable performance improvement; partnering with our clients we combine technical expertise with a passion for life preservation, harm reduction and asset protection.

We are a service unit of DEKRA SE, a global leader in safety since 1925 with over 45,000 employees in 60 countries and 5 continent. As a part of the world's leading expert organisation DEKRA, we are the global partner for a safe world.

We have offices throughout North America, Europe, and Asia.
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