

MOVING TO THE 2ND GENERATION IN BEHAVIOUR-BASED SAFETY

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Behaviour-Based Safety has moved from being a curiosity to becoming an established part of many companies' safety programmes. But what is the right perspective on it – is it a passing fad that will soon die away or, as we saw with HAZOP, is it a foundation methodology for the future? The answer depends on how we see the field of safety and what next steps we take. We discuss typical shortcomings in what some people call behaviour-based safety. We then discuss strategies for maintaining the strengths while addressing the weaknesses, before suggesting two next steps: rethink the old concepts, making the radical proposal that we should take away the emphasis from behaviours and focus instead on the working interface; and use behaviour-based safety methodology as a foundation for organisational change. The paper ends with a case study from a pharmaceutical company that is implementing most features of the '2nd generation' of behaviour-based safety.

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ESTABLISHING THE NEXT STEP IN BEHAVIOUR-BASED SAFETY

Behaviour-based safety (BBS), pioneered in the early 1980s, has attracted so many imitators that the BBS label no longer means very much. It is time to take stock of the current scene and to draw lessons for the future of behaviour-based safety. We discuss: the origins of BBS; report on current confusions about it; sketch the evolution of an integrated model of BBS; make suggestions for where BBS should move in the future; and close with a case study.

THE ORIGINS OF BBS

BBS came into being as the result of three currents of work done separately with a small degree of overlap. The first was the applied behaviour analysis work of psychologist Judi Komaki, then at the Georgia Institute of Technology in the United States. Komaki was one of a small group of academic applied behavioural analysts working on industrial performance. Her interest was not solely in safety; she was interested in the use of applied behaviour analysis techniques in industry in general. However safety became the focus of her study when one of her students proposed to use behavioural techniques to design a performance improvement at his family's 200-employee food processing plant. As it happened, safety was the area in which the plant most wanted to see performance improvement. Komaki and her associates published an academic paper on their findings in 1978[1].

In 1979, John Hidley and one of us (Tom Krause) were asked by an offshore oil-drilling company in California to help them find innovative ways of improving safety performance. Based on our preliminary analysis of the situation facing this employer, we recommended the use of applied behaviour analysis as an improvement methodology[2]. This was the beginning of BST.

During this same period Gene Earnest and Jim Palmer at Proctor and Gamble were developing a methodology drawn from the behavioural sciences. To our knowledge, Earnest and Palmer were the first to use the phrase "behavior-based safety".

Although similar work in the UK began rather later than in the US, by the late 1980s extensive university research had been applied in industry and a strong body of experience developed through the 1990s, as described by Cooper[3].

CURRENT CONFUSIONS ABOUT BBS

Twenty years later, BBS means many different things to different people. The ambiguity or fuzziness of the term is so far advanced that "BBS" has lost its power to describe anything clearly. For example, some organisations call what they are doing BBS even though they admit they have no involvement of shop-floor personnel in the effort, no operational definitions of critical behaviours, and no continuous improvement mechanism. What they do have is the traditional manager/supervisor audit programme focussed on disciplinary action. The proponents of that approach lose no opportunity to refer to it as "behaviour-based safety".

This is just part of the trend in which all kinds of techniques, including the use of incentives related to accident rates, are labelled "BBS" in an apparent effort to make them more popular. This presents enormous difficulties in communication. One end of the continuum of confusion is the idea that ***anything*** to do with behaviour, attitude, culture, the worker, etc. is BBS. The next level of confusion is represented by the idea that, to implement BBS, all you have to do is identify some behaviours on a check list, get people to go out and start observing them, apply a lot of reinforcement (including tangible incentives) and then sit back to watch your incident rate fall.

This drastic oversimplification about BBS is troublesome even where the effort is supplemented by standard safety activities. However, this minimalist, "by-the-numbers" version of BBS becomes even more problematic when people offer it as the primary component of a safety effort, instead of as part of an integrated approach that strengthens and supports existing safety systems.

It is hardly surprising that some trade union representatives raise a number of valid concerns about BBS – based on what they have seen labelled as BBS in various organisations – for example:

THE BLAME GAME

Because behaviour-based safety tracks shopfloor behaviour, they predict that it will necessarily turn into fault-finding and blaming.

REDUCED HAZARD MITIGATION

They worry that managers will think that, once they have implemented behaviour-based safety, they can stop pursuing engineering controls for hazard mitigation – so resources will be taken away from facilities, design and maintenance.

DRIVING DATA UNDERGROUND

They believe that, if managers set ambitious targets for the 'numbers' coming out of behaviour-based safety, then they will get the numbers they want – but they may bear little resemblance to reality.

IGNORING SAFETY SPECIALISTS

They also express concern that, because behaviour-based safety encourages the involvement of people who are not safety specialists, this approach bypasses a site's safety specialists and "de-skills" the safety function.

THE EVOLUTION OF BST'S APPROACH TO BEHAVIOUR-BASED SAFETY

Since 1980, BST has helped organisations to implement BBS at more than 1,400 sites around the world. Over that period, like any organisation that is committed to continuous improvement, BST has significantly evolved its Behavioural Accident Prevention Process® or BAPP® technology.

1980 – 1985. In these early years, the method used by BST was management-driven from the top down. BST completed about 15 projects using that supervisor-driven model.

1986 – 1997. From 1986 until about 1995, Krause and his colleagues changed the model to one that was employee-driven. BST integrated Total Quality Management and Organisation Development principles with those of applied behaviour analysis in developing BAPP technology. BST also developed software to store and analyse data generated during behavioural observations, and emphasised feedback as an improvement mechanism and as a type of reinforcement. During this period, BST completed about 200 projects.

1997 – present. Since 1997 the BAPP model has evolved to include more completely the engagement of ***all employees***. This occurred in response to the need to address more directly the contradiction that some organisations perceived between an employee-driven process and management accountability. The contradiction does not exist, but failing explicitly to address it allowed misinterpretations to occur.

In spite of warnings to the contrary, some companies implementing BAPP left out the manager and the supervisor. In those companies it was as though people thought that to involve front-line personnel it was necessary to exclude the managers and supervisors. As a result, they put in place change efforts that had strong employee involvement and support, but weak support and commitment from supervisors and managers. It did not take long for organisations to realise that, in order to make a BAPP initiative work over the long run, managers and supervisors had to be involved in appropriate ways.

Some of those ways include: involving some managers and supervisors as equal members of a BAPP steering team, along with front-line employees; training managers and supervisors as observers; developing a datasheet for the management behaviours that support safety ("walking the talk", which is not always easy for managers who are increasingly faced with intense production and financial pressures); using the behavioural safety process to gather "before and after" data to assist other initiatives; using existing departmental continuous improvement teams to develop behavioural action plans to remove intransigent barriers to safe behaviour that have been identified by the observation process; and extending the scope of the behavioural safety process to address other important matters such as product or service quality.

The significance is that the behavioural safety process becomes a method for continuously improving facilities, equipment, design and management system issues. Of BST's current total of implementations, over 1,000 are based on this most current model.

IS BEHAVIOUR-BASED SAFETY STILL THE CORRECT LABEL?

For many years BST's research and development department has analysed hundreds of site data sets containing barriers to safe behaviour. The pie chart in Figure 1 is an analysis of 13,264 behaviours observed at 13 sites.

The pattern of distribution across barriers is similar at these sites to many other sites. Namely, 'facilities & equipment' and 'hazard recognition & response' make up the largest categories, comprising a majority of the barriers to safe behaviours. It is worth noting that this kind of data would not be available if it were not for a behaviour-based methodology that allows it to be gathered. Examining and thinking about these data in consultation with many

different organisations has caused BST to take a fresh look at the relationship among causal factors that contribute to injury.

As we now know that barriers to safe behaviour are primarily related to conditions, equipment and management systems, rather than to personal choice, it no longer seems reasonable to state that:

"80 to 95% of injuries are caused by unsafe acts"

However carefully we phrase it, many people still read that as requiring us to make a choice between behaviours and facilities – and implying blame for the worker if he or she acted unsafely.

The focus of our safety improvement efforts has to change from the worker to the systems that enable safe behaviour.

HELPING ORGANISATIONS REDUCE EXPOSURE TO INCIDENTS BY IMPROVING THE WORKING INTERFACE

If we analyse injuries exhaustively, looking at a variety of organisations across industries over a period of several years, what we find is that the actual cause of the great majority of injuries is an interaction between the worker and the facility. We describe this interaction as the Working Interface. Furthermore, we believe that improvement in safety consists of systematically defining and improving this critically important working interface (Figure 2) and we can now change our definition to:

"Incidents are caused by multiple factors which are seen in the working interface. Many exposures are likely to occur before an injury. The specific relationship between exposure and injury varies with type of industry and type of injury."

In spite of much confusion about the essence and the applications of behaviour-based safety, it remains an effective tool for performance improvement, and it is growing stronger and more flexible as more companies adapt it to their unique needs. For companies to succeed with BBS, it is important for them to look beyond the label and understand what constitutes an effective system. And for BBS to continue to thrive, it must continue to evolve, retaining those characteristics that are effective, while addressing perceived weaknesses.

GOING BEYOND SAFETY

Most companies are looking for ways to:

- Engage their employees in problem solving;
- Develop their employees' capacity to respond to challenges; and
- Use data-based tools to make improvements.

We are now demonstrating that behaviour-based safety methodology is a model for organisational change by applying it to such diverse issues as:

- Improving quality in manufacturing processes;
- Improving student life on a college campus;
- Medical error reduction; and
- Improving quality and customer service in a business service company.

CASE STUDY OF BBS AT A UK PHARMACEUTICALS PLANT

Within BST, the change in focus from 'the worker' to 'the systems that enable safe behaviour' has not occurred overnight, but has been an evolution over several years. This can be seen in the experience of the major multinational pharmaceuticals company SmithKline Beecham (now GlaxoSmithKline) that in 1998 launched pilot implementations of BST's BAPP technology at two of its sites – one at Worthing UK and the other at Clifton, NJ, USA. Since then, BAPP implementations have begun at three more of the company's sites – in Ireland, Kenya and Argentina. This brief case study reports on safety gains at the UK site.

Following its August 1998 launch of behaviour-based safety, the Worthing site's twelve-month moving average for lost time accidents (LTAs) has improved steadily (Figure 3). An important factor of this success is the contribution of the site's trained BAPP observers who consistently meet or exceed their targets – in 2000 they completed 3,309 observations against their target of 3,114 (based on one observation per observer per week).

ACTIVE STEERING TEAMS AND OBSERVERS

The site comprises both primary and secondary production. Using reactors, filters, dryers and pumps, primary operations include large-scale fermentation, extraction and fine chemical processing. Secondary operations include bulk powder processing, producing finished tablets and capsules, and product packaging using high speed machinery. Using two steering committees, one for primary production and one for secondary production, the site implemented the process in seven production units out of a total of ten business units.

A BST consultant began training the two steering committees together in July 1998. The committee members in turn trained many of their colleagues as observers. The observers use the data sheets to record the rates at which their colleagues are using the identified safe or at-risk behaviours. After an observation, the observers use two-way feedback to reinforce the safe behaviours they have seen. They then talk about any at-risk behaviour they may have seen. When it is within the control of the observed personnel to avoid an at-risk behaviour, one of the aims of the feedback discussion is for them to agree that in future they will use the identified safe behaviour.

When existing procedures or conditions prevent this change from being within the control of the worker, the observers record that information along with their colleagues' thoughts on how to remove barriers to safe behaviour. Problem-solving teams then use this observation data to make improvements. (This is what BST would now describe as "improving the working interface").

FACING UP TO THE COMMUNICATION CHALLENGES

The first challenge was a need for communication across seven business units using many different work patterns. There was also a need for good communication through all levels of the organisation, including team leaders and managers. In addition, the observers needed ongoing feedback to remind them of the value of their work, to motivate them, and to keep them calibrated with emerging observation targets.

The first site-wide BAPP co-ordinator was especially effective at promoting the process and grabbing people's attention. For a Worthing site open day in May 1998, just before the BBS process was launched, he set up an exhibition stand featuring literature and videos on the BAPP approach to safety. He and the BST consultant were on hand to chat informally about the process and implementation. He then developed a briefing pack for other presenters to use and, to achieve continuity across all seven business units, this pack reproduced the slides and handouts from the exhibition stand. The steering committees used this pack to conduct

approximately five presentations per work area covering every shift, totalling 40 to 50 presentations over the entire site.

In addition, the BAPP team produced and published a double-page introductory article in the site's quarterly magazine and have since gone on to launch a very readable behaviour-based safety newsletter.

UNION INVOLVEMENT

The AEEU and TGWU are both represented at the site, and members of the unions were appointed to positions on the steering committees. The site-wide co-ordinator comments that, "A conscious effort was made to involve the unions from the start and because of that we have a very good relationship with them over behaviour-based safety". The co-ordinator of the secondary area steering committee has been a TGWU safety representative for several years and she notes that, "Before we had behaviour-based safety, everyone in my department expected me to solve all their safety problems. Now I have a group of observers and steering team members who help to spread the load and get better involvement."

ADDRESSING OBSERVER CONCERNS

To keep observers in the loop, the steering committees issue reports and conduct regular meetings that are keyed to observer concerns. These communications emphasise the gains the site has made based on observation data.

To remove some of the time pressure on observers, the site is using an alternative feedback method that they call 'hindsight feedback'. When they observe colleagues performing some high priority production jobs, instead of directly engaging in two-way feedback the observers return after the job is completed to conduct a feedback session. This procedure lets the observers conduct observations when they have time to do so and when the observed person is actively engaged; then it lets the observed personnel receive the feedback after the priority job is complete.

CELEBRATING THE GAINS

GlaxoSmithKline Worthing sees its success in various ways. Its lost time accident rate shows continuous improvement. The site's observers are meeting and beating their targets. In March and April of 1999, for the first time in 10 years the site had zero reportable injuries for two consecutive months. According to the current site-wide co-ordinator, beyond those numbers the site's safety culture is improving as more people understand the connection between using the identified critical safe behaviours and reducing their exposure to injury.

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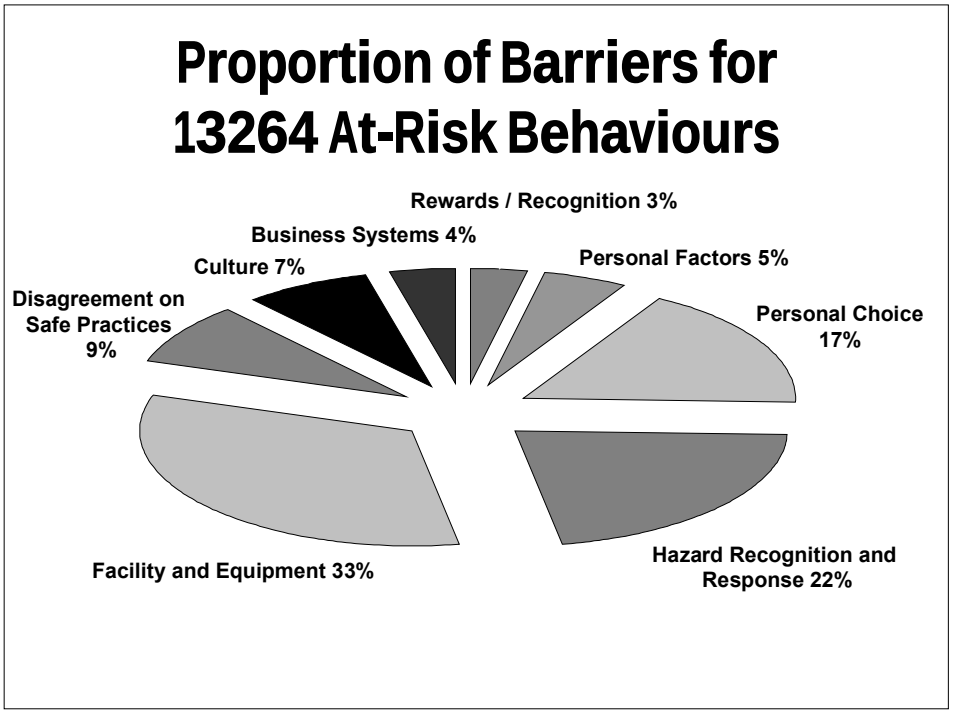

Figure 1. Analysis of at-risk behaviours at 13 sites

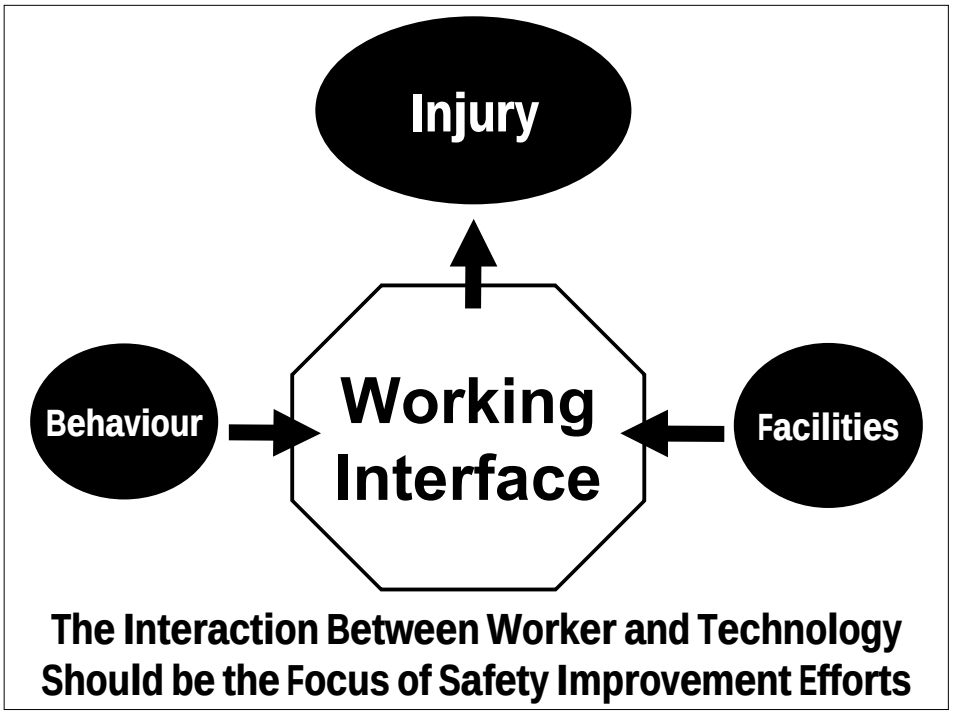

Figure 2. Injuries occur at the working interface

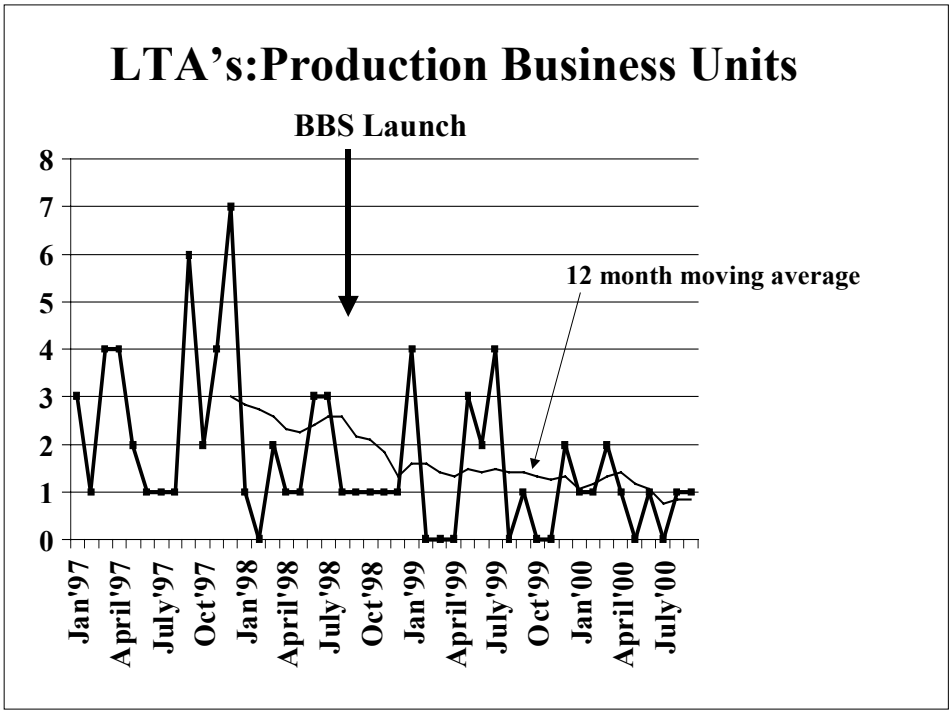

Figure 3. Lost Time Accidents have fallen since the launch of BBS