

USING BEHAVIOUR-BASED METHODS TO IMPROVE ORGANISATIONAL EFFECTIVENESS

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Companies are learning that behaviour-based methodology is broadly applicable to performance improvement. The successful use of this method rests on some familiar principles: behaviour analysis, employee engagement, implementation design, and some new developments: excellence in organisational functioning and the optimal use of information technology. When combined, these tools become a powerful engine to drive performance improvement in safety, quality, error reduction and customer service. This paper provides an overview of combined methods. It ends with a case study from ConocoPhillips' Humber Refinery, which launched behaviour-based safety towards the end of 2001. This was built around the refinery's Safety Emphasis Team which had a newly-appointed full time leader and 12 further members who were a cross section of the refinery workforce, with the remit *"to develop, recommend and implement a series of changes which will have credibility and benefits that help us all achieve an accident free career"*.

Behaviour, Performance Improvement, Safety, Quality, Error Reduction,
Customer Service, Refinery

CONNECTING PEOPLE TO SYSTEMS

The behaviour-based approach to performance improvement is focused on a set of related problems:

- The need to increase the likelihood that the right behaviour will occur
- The need to engage personnel in the improvement effort
- How to assure further upstream diagnosis of system deficiencies
- The fact that significant performance variation is going undetected
- How to get behaviour-based performance data into the hands of workgroups and move the responsibility for improvement to them
- How to avoid over-reliance on the classroom training model
- The need for something other than disciplinary action as a tool for improvement
- The fact that positive feedback is an under-utilised but extremely powerful tool for improvement in human performance

We note that companies have used a variety of approaches to improve performance in areas such as occupational safety, reliability, patient safety, customer service, productivity, and error prevention. Those approaches include drafting policies and regulations, posting slogans, organising contests and awards, developing and delivering training, forming committees and councils, establishing best practices or quality circles, and issuing reprimands. Some of these approaches work well; some don't. When these approaches work well, the indication of success or effectiveness is

that the workgroup produces fewer non-conforming behaviours, thus reducing the rate at which errors or incidents occur.

An increasing number of organisations have successfully introduced behaviour-based safety processes and now recognise that the behaviour-based methodology has potential value in other areas of performance improvement – such as quality improvement, error reduction and customer service. So they are now expanding their behaviour-based safety processes to include other areas which are important to their businesses. Some other organisations have gone straight into non-safety performance improvement, but until now the majority have used behaviour-based safety as their starting point.

WHY LEAD WITH SAFETY?

There are three good reasons for leading with safety: ease of buy-in; visible outcome measures; and sustainability.

Ease of Buy-in

It is relatively easy to get buy-in for safety at all levels of the organisation. Paul O'Neill (the former CEO of International Paper and of Alcoa, and until recently the US Secretary of the Treasury) is quoted as saying, "A truly great organization must be aligned around values that bind the organization together", "Safety is a way to show that human beings really matter", and "Leadership uses safety to make human connections across the organization...."

Improved safety is a clear benefit for all levels of an organisation:

- For the employees, who have a reduced risk of injury;
- For the managers, who spend less time investigating accidents and incidents; and
- For the organisation, which improves its public image as well as reducing the cost of injuries and damage.

This is not always the case with other performance improvement initiatives where the organisation may be perceived (often mistakenly) as the only winner.

Visible Outcome Measures

Outcome measures are very visible for safety. Most organisations have accident data stretching over many decades, whether expressed as the RIDDOR or OSHA rates (the accident rates that are legally defined as reportable/recordable in UK and USA), total injury rates, lost workday rates, etc. In our experience, there are rarely such well understood and well recorded outcome measures for other performance areas.

Sustainability

Behaviour-based safety has an impressive record of sustainability. Figure 1 shows the percentage of all implementations of the Behavioural Accident Prevention Process[®] led by BST across the globe, that started in a given year and are still functioning today. The majority of these sites have experienced major reorganisations, changes in site leadership, changes in ownership, downsizing or other disruptive events. Even with these changes, their BAPP[®] initiatives survive and their organisations continue to reap the benefits.

CRITERIA FOR DEFINING BEHAVIOUR-BASED SAFETY

Before an organisation decides to use its behaviour-based safety initiative as its starting point for behaviour-based improvement in another performance area, it is essential to confirm the effectiveness of the behaviour-based safety process. We use several criteria to help us judge that.

1. Is there an appropriate focus on the system rather than the worker?
 - Observation data should be used to analyse behaviours and never used against an employee. The first time that an employee is disciplined, formally or informally, as the result of an observation by a peer or by a supervisor, then that is a sure sign that employee buy-in to the process will immediately be replaced by hostility.
 - Does the process avoid any direct or indirect implication of ‘blame the worker’? Focusing on routine workgroup behaviour does not mean focusing on blame or fault. Behaviour only becomes routine or common across entire workgroups when that behaviour is reinforced by system consequences. In this context, workgroup behaviour that is out of tolerance or out of compliance may be responsible for defects or errors and not be blameworthy. Instead, those non-conforming behaviours are somehow “baked” into the current system. What is called for is fact finding, not fault finding.
 - Is the distinction recognised between enabled behaviour and non-enabled behaviour? An enabled behaviour is under the control of the employee and takes little or no additional time and effort to perform it safely than at risk. Conversely a non-enabled behaviour is outside the control of the employee, due to the physical work environment or to the management systems; even if the employee wishes to do so, he or she cannot perform the task without being at risk. Clearly, different strategies are needed to resolve barriers to enabled and non-enabled safe behaviours.
2. Is observation data used to improve facilities?
 - Is there a systematic mechanism to use observation data for safety improvements? If not, employees will soon become disillusioned with the process: “Why waste our time doing observations? We report problems but nothing ever gets done to fix them!”.
 - Is root cause analysis done? ABC Analysis (Antecedent Behaviour Consequence Analysis) is a powerful root cause analysis tool that uncovers why people behave the way they do. Antecedents set the stage for behaviour, and consequences encourage or discourage the repetition of the behaviour. Behavioural science teaches us that consequences have a much stronger influence on behaviour than do antecedents. Yet most organisations spend their time and other resources disproportionately on antecedents (slogans, signs, training, policies and so on), when they need to be focusing their efforts on delivering consequences for the identified behaviours that amount to excellence.
3. Does the effort contribute to a positive culture?
 - Where incentives are used, they need to reward the desired behaviours. Unfortunately in many cases incentives are based on the accident rate, which is out of the direct

control of any employee or manager; furthermore this typically drives accident reporting underground.

- Is attention diverted away from equipment and management system issues? This can occur if the effort is focussed solely on behaviours.
4. Are appropriate roles given to employees?
- Are front line employees involved in the process? A typical behavioural safety team, comprised mostly of front line employees, will be empowered to manage the observation process, analyse data, and address the issues that are under their control – those affecting enabled behaviours and localised difficult behaviours. On the other hand, management will be responsible for key appointments, organisational issues, and addressing issues that are outside the control of the behavioural safety team – those affecting widespread difficult behaviours and non-enabled behaviours.
 - In the excitement and enthusiasm of empowering front-line employees to manage significant part of a behaviour-based safety process, it is all too easy to overlook other professionals who have an important role to play. Thus a safety professional would typically be involved in hazard identification, root cause analysis and remediation. An engineer would typically be involved in designing any equipment changes needed to remove non-enabled barriers.
5. Is the role of behaviour-based safety set in its proper context?
- Again, in the excitement and enthusiasm of implementing behaviour-based safety, it is easy to exaggerate its role. Wise organisations recognise that BBS is but one component of a comprehensive safety system.

CROSSING THE BRIDGE FROM SAFETY TO PERFORMANCE IMPROVEMENT

Before seeking to improve performance, you should ask a series of questions about the functioning of the organisation. These include:

- How effective is your organisation at reaching its objectives?
- How easily does your organisation respond to the necessity of change?
- How efficient are you at making things happen?
- Do you have high trust, good communication and high levels of teamwork – or the opposites?
- Do you have alignment for improving performance?

Following extensive research, BST has developed an Organisational Functioning Survey (Figure 2) which provides some answers to the above questions by first assessing the CAUSES under three main headings:

- Organisational Factors
 1. Procedural justice
 2. Leader-member exchange
 3. Management credibility
 4. Perceived organisational support

- Team Factors
 5. Work group relations
 6. Teamwork
- Safety Specific Factors
 7. Organisational value for safety
 8. Upward communication
 9. Approaching others

These CAUSES feed through into EFFECTS:

- Organisational commitment
- Openness to change
- Job satisfaction
- Mutual trust and respect
- Organisational citizenship behaviour
- Excellent communication

In turn, the EFFECTS result in OUTCOMES such as:

- Injury rate
- Level of safe behaviour
- Quality
- Customer service

USING BEHAVIOUR-BASED METHODS TO DRIVE CROSS-FUNCTIONAL PERFORMANCE IMPROVEMENT

We recommend using a staged approach, building confidence at each step before moving further forward:

1. Define Phase 1 performance objectives, establishing a continuous improvement mechanism for safety performance while setting the stage for expansion into other performance areas.
2. Complete assessment of organisational functioning.
3. Implement Phase 1 methods: primary behaviour-based safety.
4. Demonstrate success based on predetermined outcome criteria.
5. Set Phase 2 performance targets e.g. quality, decision making, medical errors, customer service, environmental events, student life, internal communication, management & supervisory alignment.

Two brief examples outline how this was done in practice:

QUALITY

This often naturally follows safety, but it is unwise to assume that all that is needed is to add some 'critical quality behaviours' to the existing 'critical safety behaviours'. The outcome measures are often less well defined than with safety; the inventory of critical quality behaviours is often much more specific to each task rather than being generic; the observer

team may have a different makeup; and the observation strategy is often different. Having appreciated and accommodated those differences, company which processes mineral clays has achieved significant reductions in the proportion of material that has to be reworked i.e. much more material is 'right first time'.

DECISION MAKING

When management at a petrochemical company analysed its environmental and safety incidents, they found that human error was a significant contributor. They focussed on the issue of response to atypical operational situations, where effective decision-making could mean the difference between a minor process upset and a catastrophic incident. Our assessment showed communications issues, where management's production decisions were not always clearly communicated to unit operators; also lessons learned during an operational upset were not always effectively communicated across shifts. We assisted site personnel to assess who made which kinds of decisions and how they made them, in particular were decisions made by groups or by an individual. We then used applied behaviour analysis to identify the antecedents (triggers) and consequences driving the existing decision-making process, before developing a model for decision-making in a team-based unit. Site personnel also developed a measurement tool based on five to seven decision points for each of three decision-making scenarios, allowing the organisation to collect data on the rate at which relevant site personnel use the identified excellent decision-making behaviours.

GETTING THE BASICS IN PLACE – A CASE STUDY FROM THE CONOCOPHILLIPS HUMBER REFINERY

The ConocoPhillips Humber refinery is the most advanced refinery in Europe. Construction began in 1966 and was completed in 1969, since when there has been very significant investment to enhance efficiency, safety and environmental protection. The site has about 740 ConocoPhillips employees, about 310 alliance/core contractors and a variable number of non-core contractors, typically 700. This total workforce is known as Team Humber.

Safety has always been a high priority at Humber Refinery, with significant resources being invested in engineering controls and safety management systems. As a result, accident rates have fallen significantly since the early 1990s. However by 2001 it was widely agreed that the safety performance had plateaued and Humber Refinery recognised that 'more of the same' traditional safety measures would not achieve continuous improvement.

As part of the refinery's safety improvement efforts, a Safety Emphasis Team was formed in July 2001 with a full time leader and 12 further members who are a cross section of the refinery workforce. The team has the remit "to develop, recommend and implement a series of changes which will have credibility and benefits that help us all achieve an accident free career". The Refinery General Manager is the Safety Emphasis Team Champion. One of the team goals for 2001 was to "recommend, implement and manage a Refinery Behavioural Safety Process that embraces the Conoco and Contract workforce (Team Humber)". Accordingly the team leader and other team members researched behavioural processes, which has included attending public seminars and visiting two of ConocoPhillips' US refineries which have implemented BST's Behavioural Accident Prevention Process[®] technology (or BAPP[®] technology). They were impressed by the achievements that they saw in the US refineries and,

after detailed discussions, they engaged BST to assist them to implement a behaviour-based safety process – which the employees have named PUMA (Personal Undertaking to Minimise Accidents).

KEY DECISIONS

Three important decisions were made from the outset:

Integrated Implementation

It would have been impractical to implement behaviour-based safety simultaneously across the whole refinery, however to avoid a fragmented approach the decision was taken to use the Safety Emphasis Team as the core for behaviour-based safety, under which the process would be rolled out to different departments on an agreed but aggressive timetable of under two years.

Company Employees and Contractors

Another key decision was that the process should involve both ConocoPhillips employees and contractors, who were already represented on the Safety Emphasis Team. So the initial launch was with Operations staff in one of the four main process areas ('Division C'), plus the 'Heavy Trades' contractor group covering civil trades, mechanical trades and scaffolders.

Involving Supervisors and Managers

The main emphasis in behaviour-based safety is with the people who are most at risk of injury – and these are generally the front-line employees. However first-line supervisor or middle manager positions are among the most difficult jobs in an organisation. They are at the end of a chain of command, exposed to contrasting pressures and demands. Negotiating this tug-of-war successfully requires the right skills; a supervisor needs to be a good coach to front-line employees, while still achieving the objectives of the organisation. The skills that the supervisor demonstrates can make the difference between worker cynicism and worker support – and ultimately determine the level of organisation success in many aspects, not least in behaviour-based safety. As well as the normal briefing for managers and supervisors about PUMA, two further steps have been for managers to develop and commit to an inventory of critical leadership behaviours which complement the inventory of critical behaviours for front-line employees; and to provide supervisors with skills training to enhance their effectiveness in safety.

IMPLEMENTATION STEPS

The implementation steps were:

- Planning Meeting with the Safety Emphasis Team and key representatives of management, in particular to select the departments for the initial implementation. An important factor in this selection was the enthusiasm of the managers from Process Division C and the Heavy Trades Contractors.
- Implementation Design Workshop, consisting of ½-day focus groups each with up to 20 representatives of the selected departments, to identify the issues which needed to be addressed to ensure success of the implementation and to start developing action plans for the top priority issues, followed by a Design Meeting which tailored the implementation in the light of these issues.

- Briefing Sessions for all members of the selected workgroups, which took away the mystery about what was about to happen.
- Training of Steering Team (i.e. Safety Emphasis Team plus additional personnel representing the workgroups in the implementation). This included:
 - initial training during which the Team developed a draft Inventory of Critical Behaviours[®] - and then went out and conducted buy-in meetings with all members of the selected workgroups
 - second training focussing on observation & feedback;
 - Third training on observation quality – there is little point in gathering masses of unreliable data;
 - behavioural action planning, to remove barriers to safe behaviours. Two important parts of this training were to focus on a very small number of at-risk behaviours where the effort expended would yield the greatest results, and to integrate the action planning with other performance improvement processes in the refinery;
 - observer training, to ensure that the refinery has the capability of training future generations of observers.
- Management Training, which was key to ensuring that they were kept in the loop and understood their roles.
- Meanwhile PUMA has been launched with other process divisions and contractor groups.

Still to come will be:

- A *Datalink* analysis of the site's BAPTrack[®] database, to identify trends that would not be immediately obvious from a visual inspection; and
- A *Sustainability Review* to evaluate the strengths and further improvement opportunities in the process. It uses BST's proprietary Sustainability Index, which is based on implementation experience at hundreds of sites and identifies issues that should be addressed to improve process long-term sustainability.

Throughout the implementation, BST provided a host of **off-site services** including: phone consultation with the Facilitator, Management Sponsor and others; review of faxed and mailed materials, including draft of the ICB checklist, committee meetings minutes, etc.; preparation and customisation of training materials; and writing of follow-up letters and recommendations. The site is also eligible for **BST User Network Benefits**, including attending Users Conferences – indeed ConocoPhillips Humber set a new precedent when they invited three of their US colleagues to visit the refinery before joining seven ConocoPhillips Humber representatives at BST's 2002 UK Users Conference.

If we were to start again, what would we do differently? When this question was asked of key members of the Safety Excellence Team and of the BST consultants involved, they all replied, "Very little".

SUCSESSES

Even at this early stage, several important successes can be recognised, including:

- Engagement from all employees throughout the organisation;

- The inventory of critical leadership behaviours is developing commitment and support among managers;
- By giving responsibility to front-line employees and contractors, there is real ownership and accountability at the sharp end;
- Reliable upstream data are being collected through observations in the plants, workshops, offices and even transportation, the latter largely through self-observations;
- Accident investigations are now identifying the critical behaviour chain, rather than persecuting the injured party;
- Action planning is being done by problem-solving teams close to the problem, using natural work groups and co-opting in engineering resource when needed to remove specific barriers;
- The accident data review group has a new focus;
- There has been a very subtle and gradual change in the refinery culture – “The way we do things around here”; and
- The ‘Team Humber’ concept embodied in PUMA is helping to break down the traditional barriers between ConocoPhillips employees and contractor employees.

CHALLENGES

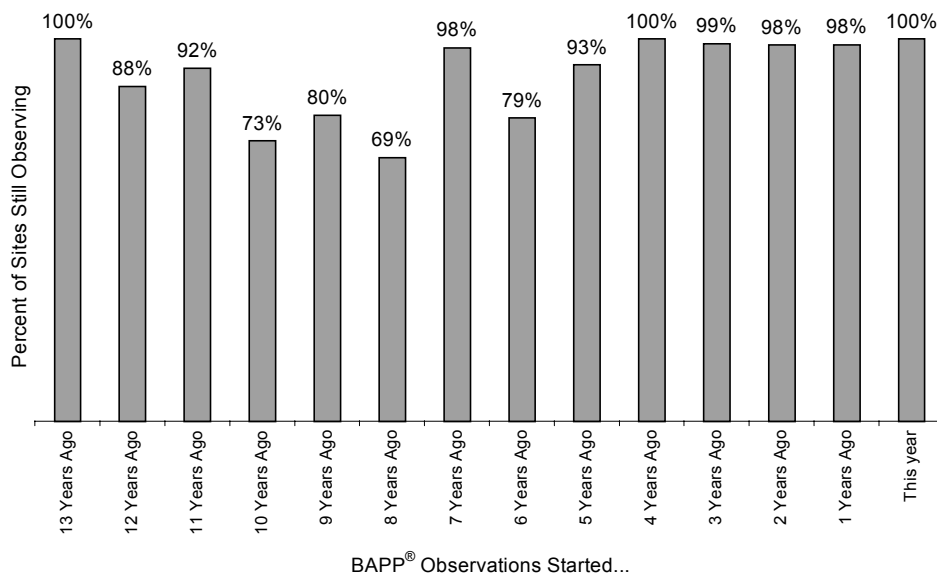
Like any other initiative, PUMA has its share of challenges – and the Safety Emphasis Team and management are working together to overcome them:

- Failure of past change efforts;
- Leaders “too busy for PUMA”;
- Teams working in off site locations;
- People with learning difficulties;
- Communication across the site to all work groups whilst keeping the information relevant to the individuals; and
- Maintaining the initial interest.

CONCLUSION

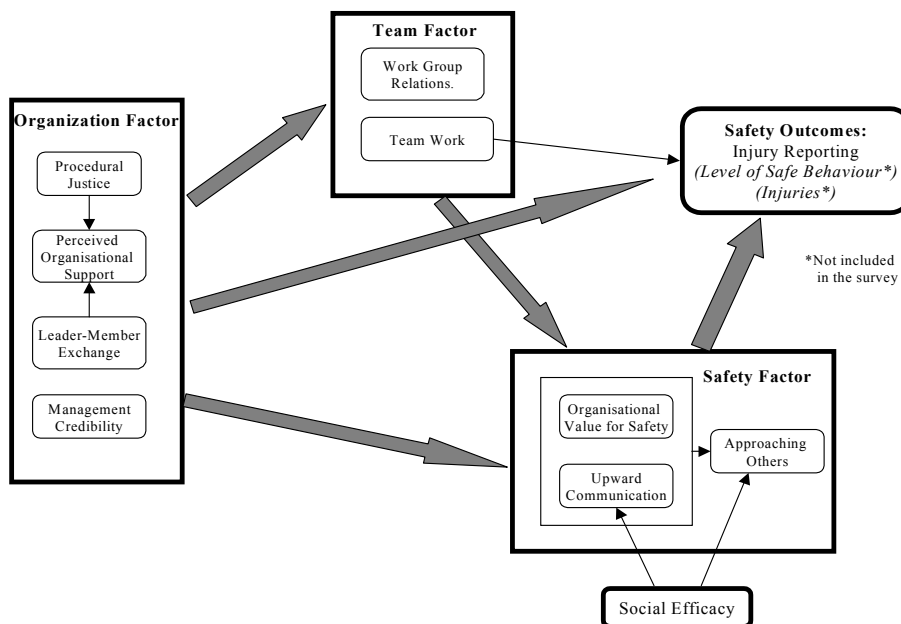
ConocoPhillips Humber refinery has made an excellent start in implementing an effective behaviour-based safety process. Its challenges in the next few years are to maintain the initial enthusiasm – and to expand the process to other important performance areas beyond safety.

Sustainability of the BAPP® Technology



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Figure 1. Sustainability of the behavioural accident prevention process®



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Figure 2. Organisational effectiveness – causes, effects and outcomes