

BEHAVIOURAL MANAGEMENT OF SAFETY (BMOS) IN A MULTINATIONAL CONSTRUCTION COMPANY

1. Organisations involved

Mace Group

2. Description of the case

2.1. Introduction

Mace is an international consultancy and construction company, offering highly integrated services across the full property and infrastructure lifecycle.

Mace directly employs around 3,500 staff at managerial level; the remainder of the workforce is entirely sub-contracted from the supply chain.

The company strives to be the safest in the industry in order to set new standards, fully protect its clients' investments, and most importantly, protect the well-being of its people and others on site. BMOS (Behavioural Management Of Safety) integrates behavioural strategies and processes into health and safety management systems. Working at all levels of an organisation, BMOS analysis promotes safer behaviour and environmental conditions to deliver continuous improvement in health, safety and business performance. The BMOS programme creates a systematic approach that defines a set of behaviours to reduce the risk of work-related injuries. This programme follows behavioural modification¹ principles (Dejoy, 2005; Geller, 2006; Skinner, 1938). Such an approach is capable of quickly mitigating commonly occurring behavioural risks, useful for a subcontracted workforce where there is only a short window of opportunity for influencing worker practice. It achieves this by collecting data on safety critical behaviours, and by providing feedback and reinforcement to encourage positive behaviour. The data are also used to identify root causes, facilitate problem solving, and develop recommendations for continuous improvement.

2.2. Aims

BMOS broadly aims to improve health and safety performance across the business by mitigating risk-taking behaviour. More specifically, it aims to:

- Engage the workforce to make contributions and recommendations towards continuous health and safety improvement
- Create an environment where the workforce is encouraged to repeat safe behaviour, to support the business and prevent loss

¹ Behavioural modification (or behavioural safety programmes) seeks to change behaviour by modifying its antecedents or its consequences. Programmes typically comprise: specification of safety critical behaviours that are then monitored by observation; constructive feedback and incentives for reinforcing safer behaviours; and goal setting to provide a reference point for monitoring and reinforcing progress. (See Geller, 2006; Marsh et al., 1998)

- Improve communication between management and the workforce addressing root causes and working towards permanent solutions to removing unsafe practices
- Raise awareness of health and safety and providing training and interpersonal skills to proactively manage health and safety at all levels
- Prevent the occurrence of further accidents/incidents by tracking behavioural data and looking at leading indicators of unsafe practices

The programme is delivered by Mace Sustain, an internal group, which offers a consultancy service for health, safety and environmental issues to Mace itself.² Two behavioural specialists (in-house consultants) are responsible for programme delivery. Mace also uses an external consultancy when extra resources are required on projects.

2.3. What was done, and how?

BMOS is a behavioural modification based programme developed in-house and tailored to suit the safety culture of the organisation. It uses behavioural observations as a prompt for root cause analysis. BMOS is designed around three core components, namely, leadership, training and behaviour change.

Leadership - Health and safety experts work on an individual and group basis with leaders to support and enable them to deliver effective health and safety on site.

Training - Regular training is provided to ensure that staff and the supply chain have the tools they need to manage, enforce and perpetuate a positive health and safety environment.

Behaviour change - The company strives to effect long-term change among its employees through ensuring that safe behaviour does not stop when a project ends.

Programme content

The programme has four distinct phases. It begins with a leadership phase where a safety leadership team is established before moving onto a contracting phase in which client and project leader expectations are built into behavioural contracts. A subsequent training phase ensures that all members of the workforce receive behavioural training relevant to their role. In the final behaviour modification phase unsafe behaviour is analysed to produce improvement plans. Each phase is described in turn:

- **Phase 1 (leadership) Setting up safety leadership teams**
 - All those who have influence over the programme are gathered together. This includes the project leader (a Mace director or project manager), the project client, the construction manager responsible for delivery of the project, and leaders from the trade contracts.
 - All members discuss and agree project safety priorities, setting out expectations and success criteria. This ensures that the programme is tailored to leaders' needs (e.g. how to reduce falls from heights on the project, how to secure worker buy-in to safe working). Establishing this framework at the outset enables delivery of a safe project. Project leaders are ultimately responsible for setting behavioural standards in projects.

² Mace Sustain, <http://www.comogroup.co.uk/services/businesses/mace-sustain>

- Health and safety professionals oversee this process, but afford project and construction managers with the responsibility for delivery. These leadership teams create the opportunity for obtaining leader buy-in to BMOS on projects. This is further enabled by the visible commitment of the organisation's board to improve safety performance and client expectations that behavioural safety will form a core component of projects.

- **Phase 2 (contracting) – To determine and agree contracts**

This does not concern financial matters, but focuses on building project leader and client expectations relating to behavioural safety into behavioural contracts. This is a two-way agreement of what Mace will do for clients, but also what clients are expected to do to uphold behavioural safety during the lifespan of a project.

- **Phase 3 (training) – To train leaders, supervisors, observers and workers in BMOS**

Mace runs a variety of safety-related training courses in its Business School for preferred suppliers. A passport scheme was set up to train suppliers in a number of key health and safety competencies. Behavioural safety is one of these competencies. Training ranges from safety through to productivity type discipline training. The focus of all courses is on communicating the safety standards that Mace expects of its suppliers, and how safety should be implemented on projects or behavioural and environmental programmes.

Project-level training is also provided on an ongoing basis to encourage the transfer of safe behaviour from one project to another. This helps to develop a culture of good health and safety practice on projects. Two in-house behavioural specialists champion and deliver the training. External consultants are used as and when required, and are responsible for running the train-the-trainer sessions.

- **Leadership Behavioural Safe training.** To educate supply chain leadership and project clients in worker engagement and behavioural modification techniques (defining safe/unsafe behaviours, observing behaviour, giving constructive feedback and goal setting).
- **Supervisor training.** To equip supervisors with the knowledge and skills for engaging their workers with BMOS and identifying behavioural contingencies.
- **Observer training.** To equip staff (managers, supervisors and workers) who volunteer to measure safe and unsafe behaviours with behavioural observation skills (e.g. scoring behaviours, providing constructive feedback). Attention is given to the interpersonal skills necessary for carrying out behavioural observations, such as how to approach and interact with people, which might be a new experience for construction workers.
- **Worker training.** To engage the workforce (supply chain) in identifying behavioural contingencies and improvement plans. The training focuses on engaging workers with BMOS through identifying why they behave in a certain way and the consequences of that behaviour, selecting those that have direct relevance to them and their job. Training is tailored to specific projects to increase the likelihood of uptake - for example, discussing how they are going to build in safety requirements, interfaces with other trades, completion of project-related method statements, etc.
- **Train-the-trainer sessions.** Project and construction leaders are trained to deliver the BMOS programme themselves on projects rather than the process being led by a consultant. This helps to increase worker engagement by adding variety to training delivery with the use of experts (consultants) and those involved in the project on a day-to-day basis. Project demands and client preference generally determine whether consultants or project leaders lead BMOS.

Mace also runs a number of formal education programmes (NVQs . National Vocational Qualifications³) designed to increase the safety competence of their workforce. Such courses are supported through funding obtained from various external bodies (e.g. the Learning Skills Council, the Learning Development Agency).

▪ **Phase 4 (behaviour modification) *E To change behaviours in need of changing***

We use score cards for measurements and behavioural improvement plans [for] targeting areas we want to improve, [we ask] what are the motivators, what are the consequences and we o apply that [to] change the behaviours.q

- **Selecting target behaviours.** Following the delivery of training, the causes of unsafe behaviour are analysed in order to produce improvement plans on which to base observations, feedback and goal setting. The Pick Technique^q is used whereby specific behaviours that the company wishes to influence are targeted on projects. Consequences are also selected that can be applied to change the behaviours of interest. Such an approach increases the likelihood that BMOS will have an immediate impact on a worker who might only be involved in the project for a very short period.
- **Using incentive schemes.** Incentives are used to encourage the adoption of safe working practices. These are selected on a project-by-project basis. Past examples include: a free breakfast for project teams, including the client, to discuss health and safety, entering safety passports^q into a prize draw to win £100 or a car, and knock-off-early on Friday schemes. Breakfast vouchers and time off seem to work best i.e. rewarding the team rather than an individual.
- **Consultant support.** Consultants provide coaching and support to project teams during implementation.

Worker engagement strategies

A number of strategies are employed by Mace to communicate with, feedback to and engage workers in BMOS throughout projects. This helps to identify necessary behavioural improvements and the appropriate means of achieving these. Methods include:

- Using senior management endorsement to enhance workforce motivation.
- Using the Five Whys technique to get to the root of health and safety issues. This can be used in conversations with workers to find out why they behave a certain way by asking a series of (i.e. around five) why^q questions starting with the immediate behaviour (e.g. Why did you fall from the ladder?^q).
- Communicating programme results during site briefings and toolbox talks⁴.
- Recruiting champions on site.
- Involving workers in carrying out behavioural observations and equipping them with the necessary skills.
- Using positive reinforcement and rewarding safe working practices.

³ NVQs are work based awards in England, Wales and Northern Ireland that are achieved through assessment and training. It is a 'competence-based' qualification, which focuses on learning practical, work-related tasks designed to help individuals develop the skills and knowledge to do a job effectively.

⁴ A toolbox talk^q is a short presentation to the workforce on a single aspect of health and safety. Health and Safety Executive (HSE) - <http://www.hse.gov.uk/construction/resources/toolboxtalks.htm>

- Holding safety forums or safety clinics to provide workers with the opportunity to feedback on areas needing improvement, good practice ideas on projects and/or method statement briefings.
- Providing opportunities for workers to discuss workplace conditions, behaviours or necessary improvements with their line managers on an ad-hoc basis.

Worker engagement practices go beyond the BMOS programme, and form an integral component of Mace's wider safety management system through, for example, the safety forums/clinics and discussions with line managers. This enables good practice to be shared across projects and helps to maintain the momentum to keep improving.

The workforce are encouraged to feed issues to the top, and then it's discussed and fed back down to the workforce.

Measuring progress

Mace uses a mixture of leading and lagging indicators to measure health and safety performance. These include:

- **Lag indicators.** Accident performance on projects is measured from near miss through to RIDDOR⁵ to demonstrate improvement in safe behaviours at the end of projects. Accident frequency is also measured on each project.
- **Behavioural observations.** Behavioural observation scorecards are in place to record both safe and unsafe behaviours observed on site with the goal of improving the occurrence of safe behaviours. A generic safety scorecard is under development as a leading measure to avoid purely focusing on incident and accident (lag) data.
- **Safety auditing system.** An electronic depository of safety data updated weekly by a team of safety professionals following site safety inspections and tours. It includes accident data and procedural audits. Data input into the system is analysed and used to identify trends within projects. This provides a measure of BMOS success on projects and guides subsequent actions to improve health and safety on site. This may include making improvements to the safety training provided at the company's Business School (see Phase 3 . Training) and on a project basis to increase the competency level of their workforce.

Key challenges that arose

Mace has had to deal with three key challenges during its implementation of BMOS, namely:

1. **Transience.** *While you might have the same kind of contractor working from project to project, you have no guarantee that they are using the same workforce.* Despite such a high degree of workforce transience, Mace considers projects implementing BMOS to have a common safety culture on the basis of possessing *a group of individuals [internal consultants] who provide safety support across projects.* Choosing *individuals who want it to happen on the leadership team* also helps to embed good health and safety work practices regardless of workforce churn.
2. **Securing worker buy-in.** The industry is under constant pressure to deliver work smarter, faster and better than before. This resulted in a tendency for workers to initially view BMOS as *another something we are asking them to do, another burden that is being placed on them.* Recruiting champions, i.e. those who see the value of BMOS and are immediately bought into the process, helps to encourage positive uptake amongst the general workforce.

⁵ The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). See <http://www.hse.gov.uk/riddor/riddor.htm> for further information.

3. **Securing client buy-in.** Whilst some clients expect behavioural safety to be integrated into projects, others may be less receptive. In particular, clients of small construction projects (e.g. running for 6-8 weeks) may consider BMOS as an unnecessary expense. Strong commitment from the Board (project directors and managers) helps to secure client buy-in by making it explicit that there is an expectation to use behaviour to improve project delivery. Mace has adopted the strategy of implementing BMOS initially in projects where clients are supportive in order to demonstrate its value to other areas of the business. In addition, tailoring the programme around something that matters to the client helps to secure buy-in. Mace is in the process of adapting BMOS for use by small projects.

2.4. What was achieved?

The following benefits have been recorded on projects that have implemented BMOS:

- Improved workforce health and safety knowledge and skills evidenced through increased safe behaviours noted in behavioural observations, and reductions in accident and incident frequencies. Mace has built an Accident Incidence Rate that is 300% better than the construction industry⁶. Mace's accident incidence rate for 2010 is 31% of what it was in 2006 when BMOS was rolled out. *Having to say to operatives what you are doing is wrong..is very, very rare nowadays.*
- Increased workforce receptiveness. A worker engagement survey revealed that 90% of the workforce said, *We can't stop doing this because if we didn't have it, things could actually be a lot worse.*
- Business benefits include increased profits and shareholder endorsement. On arriving at one of their worker engagement events, the company representative described one of their shareholders as ringing others and asking *Am I here, why aren't you?*

The company has also won two Swords of Honour⁷ awards from the British Safety Council, out of only 40 awarded worldwide.

2.5. Success factors

Leadership commitment to behavioural safety despite challenges that arise during projects (e.g. resourcing issues, financial factors) was key to the success of BMOS. Leaders *walking the talk* positively influenced worker buy-in. Similarly, having champions who support and promote the programme has helped to embed BMOS in Mace. In particular, health and safety professionals who oversee all strands of the programme as well as project and construction managers responsible for actual delivery. Of critical importance, however, is the alignment of BMOS with the company's safety management system. The programme ran in parallel with process-driven safe systems of work, safety training and competence systems, the emergency plan and safety audits. This enabled the root causes of accidents and incidents to be examined.

There has got to be a relationship between all the areas of training, systems at work, engagement behaviour, audit compliance. If it were to do behaviour in isolation, we would fail because we were not doing all the other techniques that a health and safety programme [needs] to succeed.

⁶ In 2009/10 there were 42 fatal injuries giving a rate of 2.2 per 100 000 workers. The incidence rate of reportable non-fatal injury was 1 300 per 100 000 workers (1.3%) in 2008/09. See <http://www.hse.gov.uk/statistics/industry/construction/index.htm> for further information.

⁷ The Sword of Honour is the most prestigious international health and safety accolade that a company can receive, and it is designed to encourage and reward organisations that work to best practice.

2.6. Further information

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2.7. Transferability

At the heart of BMOS are simple, tried and tested behavioural techniques that are transferable to other companies and across countries, namely; the use of behavioural observations, feedback and reinforcement to reduce workplace risks where worker behaviour is believed to be a contributory factor. Programmes can be tailored to companies of different sizes. For small and medium-sized enterprises this would involve putting the basics in place through the adoption of simple techniques (such as Five Whys, simplified training, etc.). Conversely, larger companies may be in a position to implement more sophisticated programmes, such as BMOS. Where behavioural safety programmes such as BMOS are implemented, these need to be integrated into overall health and safety management systems to ensure that root causes are addressed. Non-UK-based companies should also consider the influence of national culture on workplace behaviour and modifying training provided to their workforce accordingly.

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