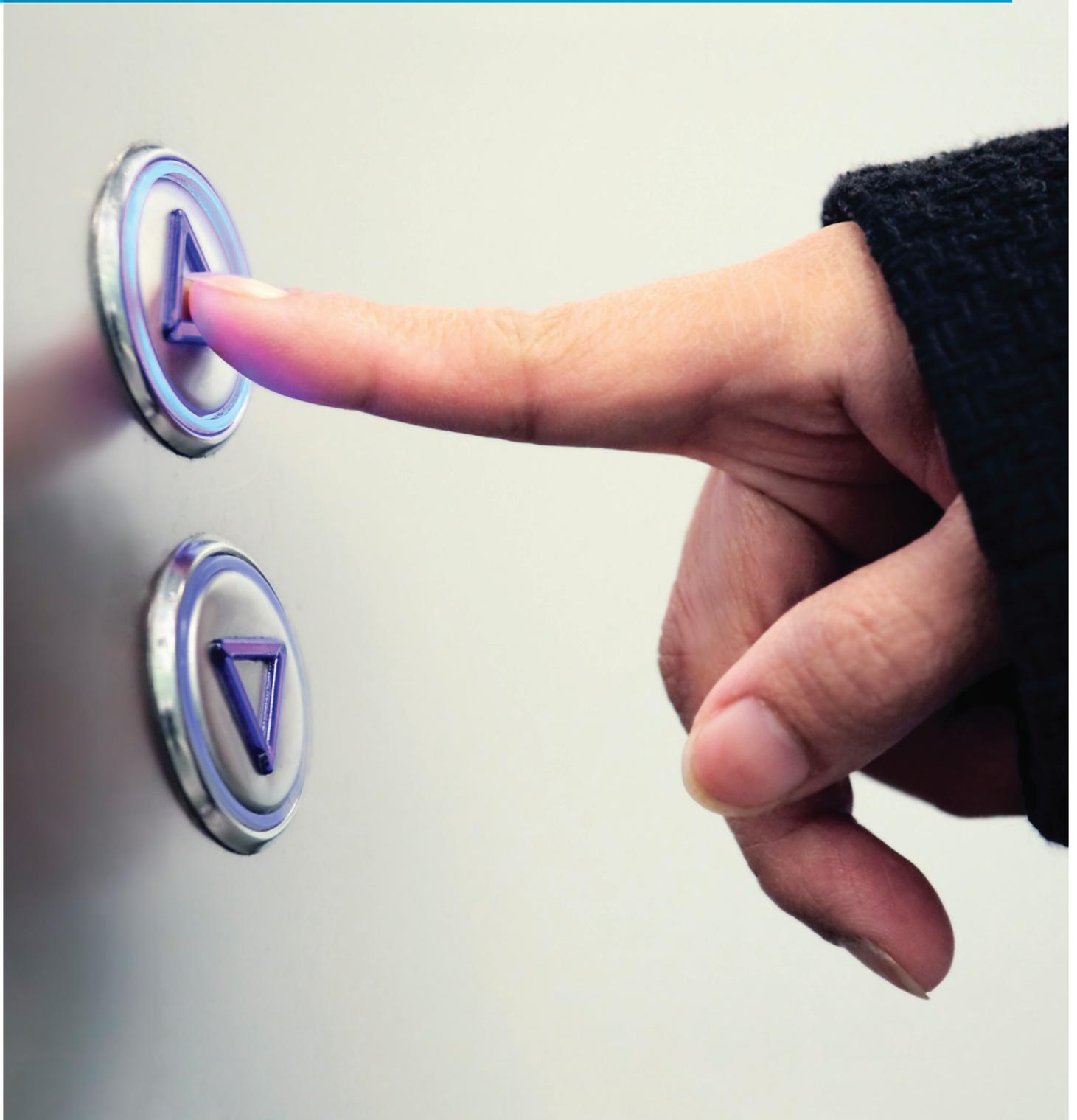


Looking for higher standards



Behavioural safety - improving performance



IOSH publishes a range of free technical guidance. Our guidance literature is designed to support and inform members and motivate and influence health and safety stakeholders.

**Looking for higher standards.
Behavioural safety – improving performance**

This guide provides an overview of behavioural safety, demonstrating its links to improved safety performance. It covers some historical background, what we mean by behavioural safety and how it works. There is some guidance to help you decide whether a behavioural safety programme is suitable for your company and, if so, how to start the process. It includes case studies to show the business benefits of behavioural safety programmes and links to more information and resources.

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PDF versions of this and other guides are available at www.iosh.co.uk/freeguides.

Our materials are reviewed at least once every three years. This document was last reviewed and revised in **May 2015**.

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1 Introduction

Health and safety in the workplace is influenced by a number of factors, from the organisational environment through managers' attitude and commitment to the nature of the job or task and the personal attributes of the worker. Safety-related behaviour in the workplace can be changed by addressing these major influences.

One way to improve safety performance is to introduce a behavioural safety process that identifies and reinforces safe behaviour and reduces unsafe behaviour. Behavioural safety processes aren't a 'quick fix' and it's important not to overlook fundamental elements. You should begin by concentrating on policies and systems – assessing and improving management and operational factors, training, design and so on.

First researched in the 1970s in the US, the behaviour-based safety approach emerged in UK organisations in the late 1980s and is now widely used in a variety of sectors in the UK. We've written this guide to introduce the background and basic principles of implementing a process which systematically addresses behavioural safety. The techniques described are based primarily on observation, intervention and feedback as ways of changing behaviour.

Business benefits

A manufacturing company with 1,400 staff introduced a behavioural safety programme and gained:

- improved productivity – the number of work days lost through injury per year dropped from 550 to 301 in four years
- improved public image – the company's managers have given presentations at major behavioural safety conferences
- staff development – many observers have improved communications and IT skills, and greater confidence.

(Source: HSE)

2 What is behavioural safety?

Behaviour can be defined as an action by an individual that is observable by others. It's estimated that in up to 80 per cent of work-related accidents, employees' behaviour – in the form of acts or omissions – is a contributing factor.¹ Such behaviour can pave the way for many pre-existing factors to come together in a negative event. There are many reasons why employees engage in 'at-risk' behaviour at work. Some examples are:

- cutting corners to save time: how often do employees decide not to use personal protective equipment (PPE) because a task may only take seconds to complete? In this example, the at-risk behaviour (the failure to use PPE) has the instant perceived benefit of saving time
- ergonomic factors: inappropriately placed machine controls may lead to improvised and potentially dangerous access arrangements
- accepted practice: 'we've always done it that way'
- reinforcement of at-risk behaviour by the actions of supervisors: this may also undermine employees' confidence in the management's commitment to manage concerns such as safety
- misunderstanding at-risk behaviour: employees may be unaware, or have a low perception, of the risks associated with a particular task or activity. This could be due to insufficient information or training
- instinctive risk-taking behaviour: some people are more naturally inclined than others to take risks.

The emphasis of the behaviour-based approach to safety is, as the name suggests, on employees' behaviour. Through influencing behaviour, this system can reduce injury rates.

The behaviour-based approach to safety focuses exclusively on the observable, measurable behaviours critical to safety in a particular setting. This is a task-oriented view of behaviour, and it treats safe behaviour as a critical work-related skill. Don't confuse it with inspections and audits of the workplace for unsafe conditions.

Behavioural safety is part of a natural progression of safety management from highly prescriptive approaches, through the engineered or procedural systems which most progressive companies have long since established, to a system which recognises workers as mature human beings with a genuine interest in their own wellbeing, who contribute best when they can see that they themselves can influence their own safety. To achieve this transition is to change the culture of the work group involved – so it won't achieve instant results. In addition, behaviour-based approaches to safety improvement are most effective when the engineered and procedural systems are working properly.²

Business benefits

A behavioural safety programme at a petrochemicals plant brought economic benefits, including:

- a saving of £250,000 per year through early identification and repair of leaks
- a 32 per cent reduction in insurance premiums
- major reductions in operating costs as workers became more confident about identifying and dealing with problems themselves.

(Source: HSE)

Human behaviour is often categorised as reflex/automatic, intended and habitual. The behavioural approach focuses on the habitual category. We don't focus on workers' behaviour in order to blame or punish them. These kinds of response are largely counterproductive and, in any case, some of the behaviour associated with incidents is encouraged or accepted by management systems. The most effective approach is to identify and measure the safe and unsafe (at-risk) behaviours that are occurring in the workplace, and manage them.

Measuring behaviour provides the health and safety system with a tool for proactive management. It's a well-established safety approach to correlate frequency with severity of injuries using accident triangles or accident ratios.

The traditional safety triangle shows that as severity decreases, frequency increases. It's simple to extend the triangle to include near misses and unsafe behaviours (see Figure 1). There are more major injuries than fatalities, more first aid cases than over-three-day injuries, and more near misses and at-risk behaviours than incidents of all kinds. At-risk behaviour is an early warning system for accidents.

The key to reinforcing safe behaviours (good habits) and removing or reducing unsafe ones (bad habits) lies in identifying those behaviours which are critical to safety and then in carrying out regular observations to monitor them. It's therefore a proactive safety management tool, with the information being obtained without anyone being hurt.

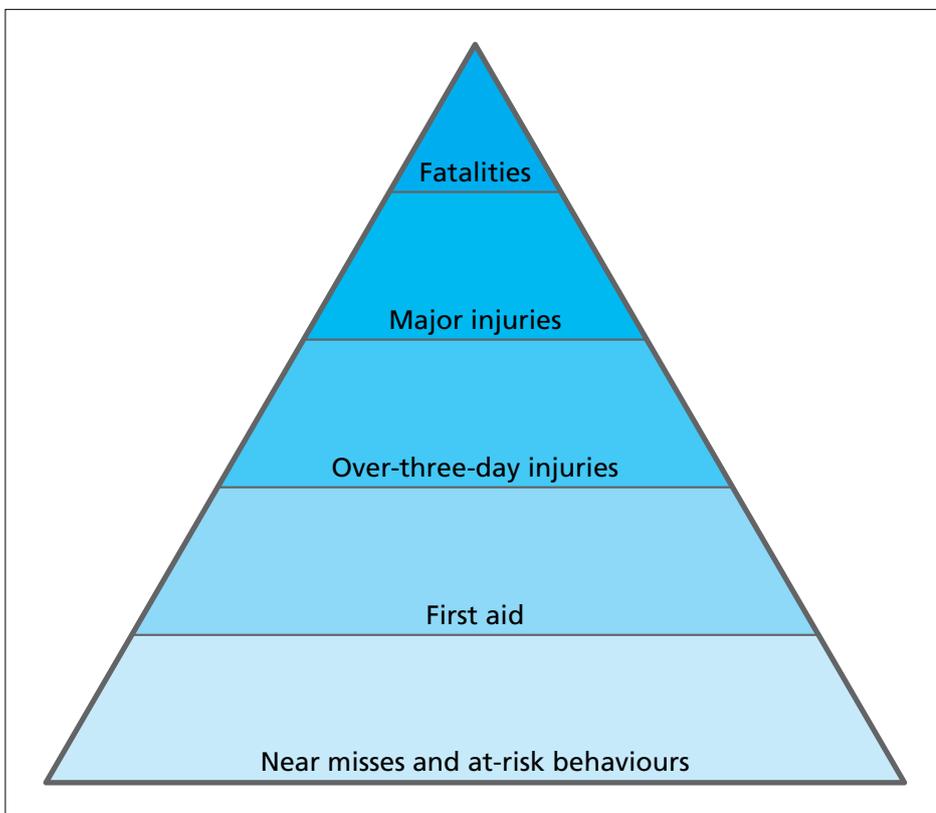


Figure 1: The safety triangle

3 Background

Behavioural safety approaches were first developed and applied in the US in the 1970s. Komaki *et al.*³ provided one of the early studies of the application of behavioural approaches to improve occupational safety in the food manufacturing industry. Their study demonstrated that defining safe working practices through behaviour and then reinforcing them positively offered a way of promoting safe behaviour at work.

Krause & Hidley⁴ combined the work of Komaki *et al.* with lessons from the quality management field and recognised training, the use of process indicators, feedback and employee participation as key factors for providing a sustainable continuous improvement process.

Krause *et al.*⁵ found that immediate peer-to-peer verbal feedback was the most effective way of achieving behavioural change in an industrial setting. After this, Krause carried out several behaviour-based safety interventions in chemical companies that were proponents of total quality management. Sulzer-Azaroff⁶ also showed that in order to change behaviour successfully, you need to understand the factors that give rise to and support safe and unsafe behaviours.

From the 1980s onwards, safety initiatives based on the observation of safe and unsafe acts or behaviours were implemented in Europe. Several studies have been conducted in different UK industrial sectors, for example in construction,^{7,8} manufacturing,⁹ nuclear energy¹⁰ and research.¹¹ In addition, the Health and Safety Executive (HSE)¹² has provided case study examples.

4 How does behavioural safety work?

It's possible to recognise a number of common features across the various systems:

- **Leading from the top.** Top management needs to 'buy into' the programme to ensure commitment and resources for the organisation.
- **Significant workforce participation.** Full engagement of the workforce in the programme is an essential part of behavioural safety. Without this engagement, it's difficult to make improvements.
- **Targeting specific unsafe behaviours.** The programme focuses on the small percentage of unsafe behaviours that are responsible for a large percentage of an organisation's accidents or incidents. These can be identified by systematically examining the organisation's accident and incident records. Getting employees and management working together to understand the reasons for unsafe behaviours and to identify and agree targets for change helps to promote ownership and agree common behavioural measures.
- **Observational data collection.** Trained observers regularly monitor their colleagues' safety behaviour against agreed measures. Making an observation is like taking a photograph – it provides a snapshot of a moment in time. The greater the number of observations, the more reliable the data become, as the employees' true behavioural pattern can be established. It's important to understand the context of the observation data, including the number of observations and the number of people observed. Additionally, more frequent observations increase the probability that the level of safe behaviour will improve, as people tend to alter their behaviour if they know someone's watching. A variable feature is who carries out the observations and how often – generally, if everyone participates in observations, it promotes a collective sense of ownership of the process.
- **Data-driven decision-making processes.** The data from the observation process allow you to measure safety performance. You can then examine trends in these data to identify the key operational areas that need improvement. It's then possible to positively reinforce employees' safe behaviour while taking steps to correct unsafe behaviours.
- **Organised improvement intervention.** The planned intervention often begins with briefing sessions in those work areas and departments that will be involved. Then volunteer groups are brought together, such as a steering committee and observers, who then receive training in observation and feedback techniques. The project team oversees the development of the process in the organisation, from the initial analysis of accident and incident data through to monitoring performance, setting goals and reviewing progress.

Business benefits

Partly through introducing a behavioural safety programme, one company achieved a 43 per cent reduction in time lost to injuries over two years and a 63 per cent reduction in major issues over the course of a year.

(Source: HSE)

- **Regular, focused feedback on continuing performance.** Feedback is the key ingredient of any type of improvement initiative. In behavioural safety systems, feedback usually takes three forms: verbal feedback to people at the time of observation; visual feedback on charts displayed in the workplace; and weekly/monthly briefings where detailed observational data are provided about specific employee behaviours. In combination, these forms of feedback provide a basis for targeting focused improvements.
- **A requirement for visible continuing support from managers.** It's vital that managers show visible leadership and commitment to the process. They can demonstrate this by:

- allowing the observers enough time to make their observations
- giving praise and recognition to staff who work safely
- encouraging employees to report health and safety concerns
- providing the resources and help needed for improvements
- promoting the initiative whenever and wherever they can.

Figure 2 outlines the key stages in setting up a behavioural safety programme.

Business benefits

Over seven years, one company achieved zero lost-time incidents, a 50 per cent reduction in injuries compared to hours worked, and improved staff morale, partly through introducing a behavioural safety programme.

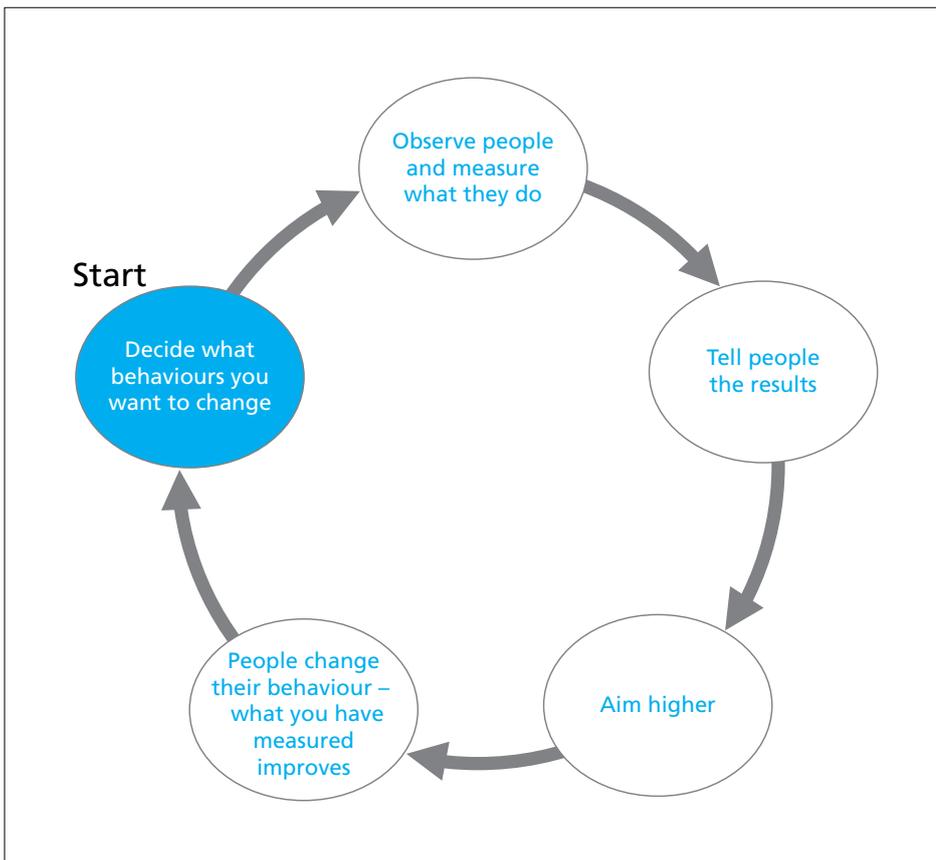


Figure 2: Implementation of a behavioural safety programme

5 Making the choice – is behavioural safety the right tool?

Below are some key questions that you need to consider before going ahead with a behavioural programme. If you answer 'yes' to these, it suggests that your organisation may be ready for a behavioural safety intervention.

- Are a significant number of accidents or incidents caused by the behaviour of front-line employees?
- Do most employees and managers want to reduce the current accident rate?
- Will managers be comfortable if employees become more involved in health and safety?
- Do managers and employees trust each other?
- Do managers accept their role in health and safety management?
- Does the organisation have enough resources for the process (eg time for training and observations)?
- Is the physical environment in the workplace well controlled?

Behavioural safety programmes have made a substantial contribution to improving health and safety performance in several industrial sectors. But there can be problems with introducing them, such as:¹³

- Workforce concerns, including:
 - issues about 'spying' on co-workers
 - seeing the programme as another initiative that won't last
 - worries that workers will be blamed for accidents
 - disagreements over safe practices.
- Management issues, including:
 - not enough management support for the approach
 - expectations of a 'quick fix', leading to a loss of commitment when improvements come more slowly
 - organisational changes that may lead to low morale and loss of key players
 - autocratic management style
 - inconsistent behaviour of managers when enforcing agreed safety behaviours and rules.

- Questions of programme suitability, including:
 - using an 'off the shelf' solution that may not suit the culture of the organisation
 - inappropriate training materials
 - not involving all supervisors in the process, leading some to abandon their responsibility for safety
 - using the programme to address unrelated issues
 - conflicts with payment and reward schemes.

6 Opting for a behavioural safety programme – what next?

Check that employees have an appropriate level of knowledge and skills for their jobs – are they competent?

Bring together a small group of people, including managers, supervisors and workers, to:

- discuss how behaviour influences the organisation's health and safety performance
 - find out how much support there is for a behavioural safety programme
 - identify activities or tasks with 'at-risk' behaviours
 - develop ways of measuring safety-critical behaviours
- recruit and train observers
 - establish baselines
 - set realistic but challenging targets for improvement
 - carry out observations, feed the results back to employees as appropriate and review
 - make sure staff stay involved in the programme by giving constructive feedback on undesirable behaviour and praise for desirable behaviour
 - use the data you gather from the process to improve performance further.

The case study on pages 10–11 gives a practical example of how to implement a behavioural safety programme.

Case study

Using a behavioural approach to improve safety in aircraft manoeuvring areas

The study was carried out in aircraft manoeuvring areas of a major UK airport for a US-based international airline, with approximately 400 employees including support staff.

Procedure

Management briefing

During the planning stages, line managers and HR staff received a briefing to explain the philosophy behind the behavioural approach, outlining their role and why their commitment is important.

Developing measures of safety performance

The company identified safety-critical behaviours from accident records and interviews with key people. They developed measures for critical behaviours in three areas of concern: manual handling, vehicle operations and general ramp safety.

Training the observers and observing safety performance

Initially 35 observers were trained to observe and measure their colleagues' safety performance and provide verbal feedback. They represented both managers and employees and were drawn from all operations. The key reasons for choosing them were that they were respected by their peers, were committed to improving safety and had good communication skills. The observations took around 20 minutes and took place at different times to make sure that they reflected a true picture of safety performance.

Determining a baseline

Straight after the observers were trained, they collected data for four days. In total, 60 snapshots of safety performance provided a baseline figure for each of the three areas of concern. The company then set targets for improvement on the basis of these figures.

Establishing improvement goals

At the end of the baseline period, all observers and representatives from senior management attended a goal-setting meeting. Here they decided goals that were challenging but achievable for improvements in safety performance across the three measured categories. They also discussed any barriers to improvement identified during the baseline observations.

Feedback and follow-up

Following the goal setting, the observers posted feedback charts around the ramp and gave short PowerPoint presentations in staff rooms throughout the day and through the internal computer network.

On average, they carried out 110 observations each month. They displayed the results of the observations every week and included information on the issues that had improved the most and those that had the worst scores.

More observers were trained to provide extra cover during busy periods and holidays, to replace observers who had left the programme and, more importantly, to cascade the programme throughout the ramp operation.

Results

During the first 19 months, the percentage of behaviour observed as safe increased from an average of 70 per cent to 79 per cent (see Figure 3). Over the next five years, the programme evolved to address other safety issues and received two ground handling awards. The company's insurers have also recognised the programme's importance through reduced employers' liability premiums.

Conclusion

This study shows that applying a behavioural approach to safety is effective for ramp operations. Despite recent economic trouble in the sector, the scheme had positive effects on safe behaviour, work methods, communication and industrial relations, as well as reducing the occurrence of accidents and related costs.

Source: United Airlines and Heathrow behavioural case study 2005 Robin Phillips CFIOSH (personal communication)

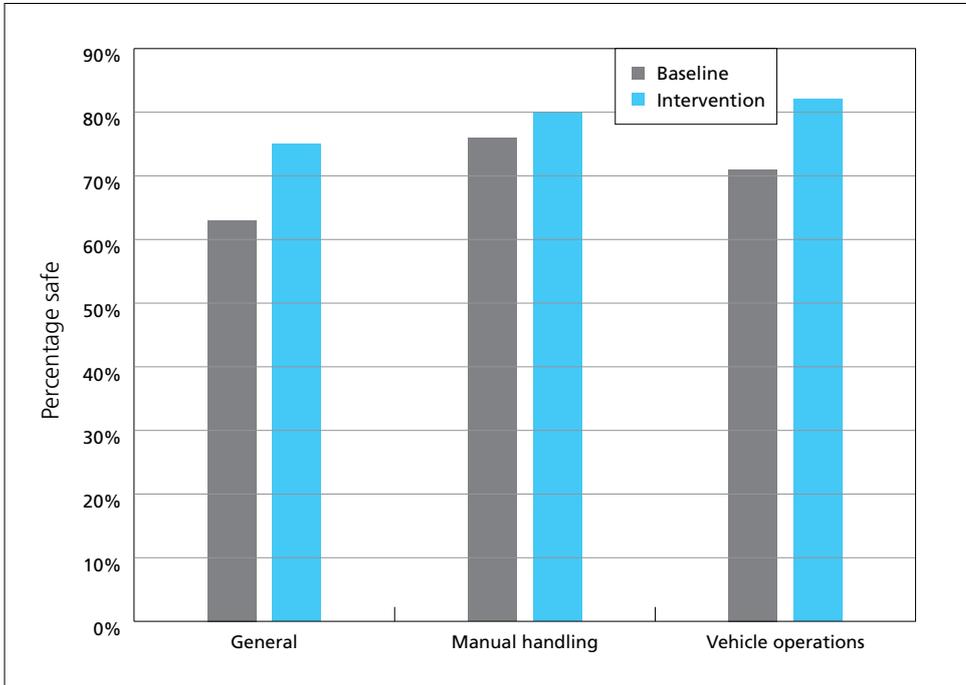


Figure 3: Percentage improvement across the three intervention categories in the case study

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- DVDs concerned with promoting safe behaviour in the workplace are available from:
- Out-Takes
info@outtakes.co.uk
t + 44 (0)20 8289 2466
www.outtakes.co.uk
 - Human Focus International
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