

Lecture PT6

A Behavioural Safety Program

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INTRODUCTION

The term Behavioural Safety means many things to many people and generally any program that focuses on modifying people's behaviour to improve their safety could be called a behavioural safety program.

Such programs may thus include Leadership, Supervision, Reward and Recognition, Discipline, Tool Box Talks, Training and so on.

In Orica we have implemented a range of behavioural type safety programs since 1994 when we started to focus on the "people" side of things, so even within Orica, the term has different meanings depending on who you talk to.

The Behavioural Safety program I will be discussing today however refers to the type that recognises that most personal injuries are the result of an inappropriate behaviour that occurs at the end of a sequence of events and would have been prevented if the person involved behaved differently.

We can refer to these behaviours as "final step" behaviours.

By example, consider two operators clearing debris from say an ANFO auger.

As one operator reaches into the auger to clear the debris, the other operator starts the auger to clear the debris, neatly removing the thumb of the first operator. The operator starting the auger behaved incorrectly. However, this might be seen as a systems failure (poor isolation procedure) in some accident investigations.

The behaviour of the operator that placed his hand (instead of a stick) in the auger however, is what we want to particularly focus on. There may have been a host of "management" failures that contributed to this incident (poor quality raw material supply, poorly designed filters, poor isolation procedure, poor training and so on) but at the end of the day, it was well within the control of the first operator, by choosing a different behaviour, to save his own thumb.

Another point of interest here is that anyone watching would have been able to physically see the behaviour of the first operator. A key aspect of a behavioural modification program is the observation of people as they go about their work. This is not to stop them just before a specific injury but to identify trends and correct behaviours with a view to preventing all injuries.

The first operator in the above example could probably have been observed demonstrating similar dangerous behaviours on several previous situations.

A SAFETY MANAGEMENT PARADIGM

It must be stressed early on that the term "blame" is not part of the vocabulary of this type of program. In fact allocating blame after an injury would see an instant demise of the entire program. Nor in any way does this program remove the responsibilities of managers to provide and maintain safe equipment, safe systems and generally a safe workplace.

It merely recognises that as managers, no matter how committed we are, we will never be able to provide a hazard (or risk) free environment and that if we are to avoid injuries, we must identify and the behaviours that cause most of our injuries and train our employees in more appropriate behaviours.

This is a new paradigm for many managers and in fact many government agencies who insist that - since management is responsible for safety in the workplace, all discussion must start and stop there.

Such a paradigm does not hold up outside the workplace, for example on the roads. A driver that considers the Government responsible for his or her safety on the roads will not survive very long. Yes, the government is responsible for providing a safe system (well designed and maintained roads, enforced regulations, traffic lights, signage, licensing of drivers etc.) but we know it is not perfect and never will be. It is our behaviour as drivers that keeps us alive.

Even though we are an explosives company, we rarely have injuries directly associated with explosives and more than ninety percent of our injuries are personal injuries, ones which it is well within the control of the person to avoid.

We would expect other businesses to have similar statistics although this will depend on the status of their operations. If you have poorly designed and maintained equipment (for example, many machines with exposed (non guarded) rotating parts), you may have a lot of accidents where the equipment is the major cause of injuries. If systems are poor, for example, poor training or poor lockout procedures, then systems failures may play a greater role in causing injuries.

BEHAVIOURS AS PART OF AN ACCIDENT CAUSATION MODEL

The following accident causation model (fig.1) may be used to further clarify what is meant by these final step behaviours and draw some people away from the paradigm referred to above. It was our experience in accident investigations that lead to the development of this model and the model itself has been further useful in directing our safety programs.

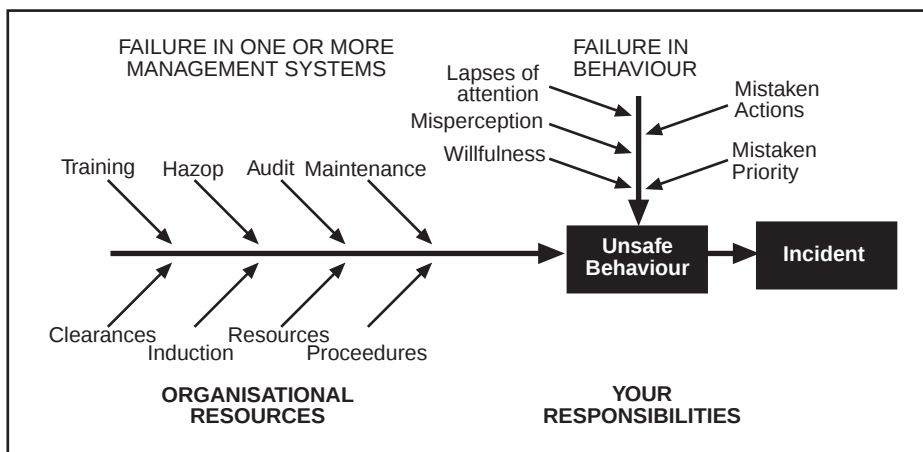


Figure 1

Two things require highlighting in this model. Firstly, that the type of behaviours referred to are the “final step” in the injury sequence, and secondly, that other behaviours (perhaps caused by lack of training, lack of procedures or systems etc) also appear but as “organisational” failures.

If we apply the model to the example of the two operators and the auger, we can see that the events leading up to the injury may have been developing over many years. The behaviour of the operator however was in the final moments of the chain of events. It was in fact “the final step”.

This model was developed partly in response to the apparent paradox that many Quality Managers were declaring that systems failures (generally regarded as an organisational or management responsibility) account for over 90% of quality non conformances, whilst many Safety Managers were declaring that over 90% of safety non conformances (injuries) are caused by unsafe behaviours..

As many people see safety and quality processes as being almost identical, previous accident causation models did not seem to explain what we were reading in current textbooks and papers.

We now believe however they are both right in that in any personal injury, the contributing causes will come from both organisational failure (systems and hardware) and personal behaviours.

The behaviours are however almost always the final step in the sequence of events leading to a personal injury.

Hopefully having established that this type of behavioural safety program is an essential part of a safety program the broad steps required to introduce such a program may now be discussed.

IMPLEMENTING A BEHAVIOURAL SAFETY PROGRAM.

STAGE 1- SETTING THE SCENE

Perhaps the first stage is to describe where it fits in the overall safety program.

In Orica, we often discuss our safety programs under three areas.

Hardware (equipment), Systems and People (see fig.2). All three areas must be well planned and maintained if we are to have a safe working environment.

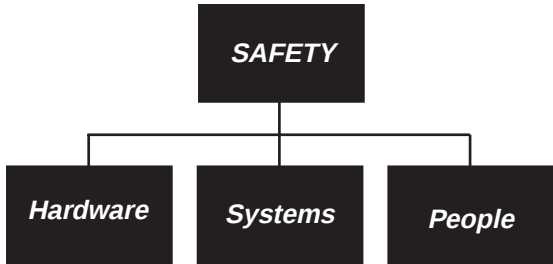


Figure 2

We can expand on Fig.2 to show exactly where a behavioural program fits in the overall scheme of things. In Fig.3 you can see that this type of Behavioural program is one of many initiatives undertaken to get people involved in safety. Most businesses would already have these initiatives in place.

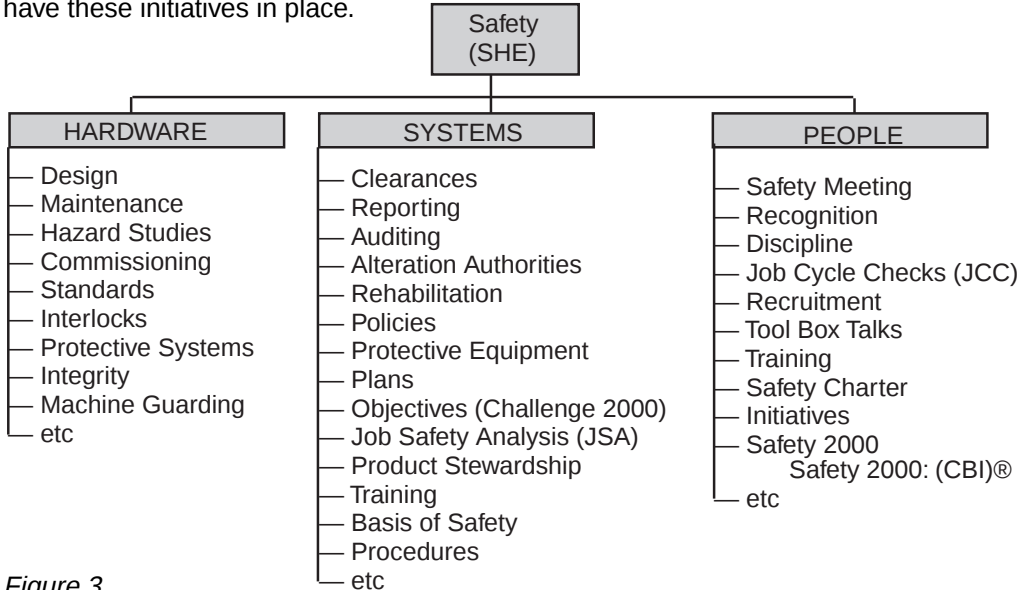


Figure 3

Describing where an initiative fits in the overall plan is important in the communication of any new safety initiative since far too often programs are launched in isolation and employees don't know where they fit. They can thus be perceived as just another initiative (a "flavour of the month") in which employees will not participate in the belief it will soon be forgotten or be replaced by another initiative.

Describing safety management under these three headings also helps reinforce the need for a behavioural safety program as they surface when we look at long term trends in injury performance in most businesses and industries.

Fig. 4 depicts these trends.

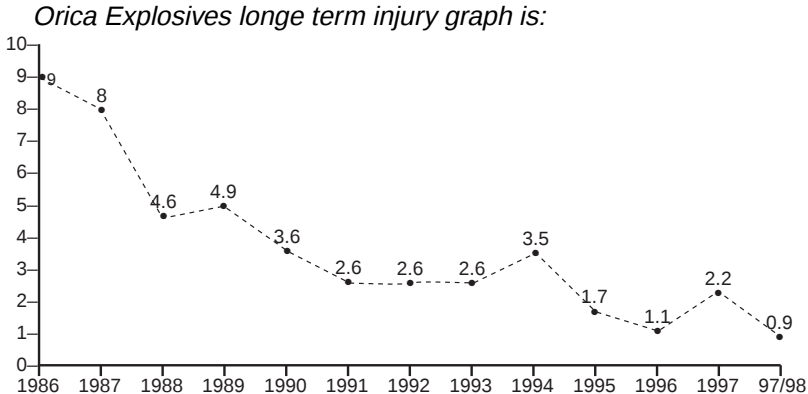


Figure 4 *LTIFR: No. accidents resulting in one or more lost days per million hours works. A LTIFR of 1 represents one injury amongst 20 worker in 25 years*

It shows that initial safety performance gains are often derived from a focus on improving hardware through enhancements such as machine guarding or basic fall protection. The next raft of improvements often come with the development of safety systems (hazard studies, accident reporting, work permits, training etc). Both stages deliver vast improvements in performance but in both stages, improvements eventually plateau.

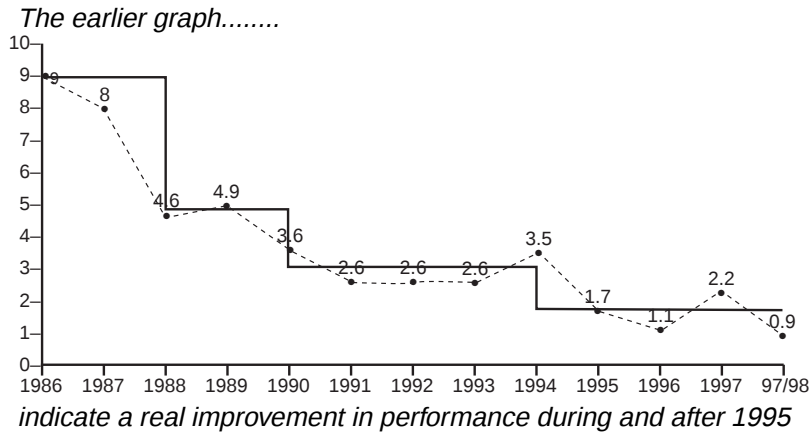


Figure 5

A number of mining companies are now looking at (or have already implemented) behavioural safety initiatives.

In summary of stage 1, everyone involved in the implementation should now be aware that :

- Behavioural safety is part of the overall safety management system
- Behavioural safety is just the next step (although a critical one) in a continuum of safety management processes required to avoid injuries

It must also be stressed that in going down the behavioural safety route, the business must not lose focus on maintaining Hardware and Systems.

STAGE 2 - DETERMINING WHICH BEHAVIOURS ARE CAUSING THE MOST TROUBLE

The simplest way to determine which behaviours are causing the most trouble is to analyse previous injury reports, as many as possible and including all types from significant to minors, and look for the contributing behaviours.

Starting with a list of behaviours in a table will make this process very simple indeed (see table 1). If you can't come up with a list, make it up as you go, but try and keep the behaviours as generic as possible. The table just makes collation of these easier.

Table 1. Collation of generic behaviours from injury reports

Line of fire	11111,	11111,	11
Eyes on path	1	1	1
Look before moving	1		1
Bending knees when lifting	11111,		111
Wearing the right PPE	1	1	1
Correct use of tools	1		1
Rushing	11111,11111, 11111,1111		

Looking for trends in injury reports is nothing new and would certainly be familiar to most safety practitioners. They are simply being applied to “final step” behaviours.

STAGE 3 - DEFINING THE BEHAVIOURS

The next stage is to document what is meant by each of the behaviours. This is important for later training and observation processes. Key words can be noted during the incident report reviews and used here.

For example in Australia and Africa, the words “bitten” and “struck” appear quite often in incident reports (there are lots of spiders and snakes) so when the behaviour “Line of Fire” is defined, the question became : “Is the person positioned such that they could be struck, sprayed, rolled on or bitten?”

The word “struck” appeared often as Orica Explosives has had a number of vehicle collisions around the plants, on the roads and on benches.

Again, the term “line of fire” is not new; only perhaps as applied to behaviours.

STAGE 4 - DEFINING AND AGREEING THE APPROPRIATE (SAFE) BEHAVIOURS

A key part of our approach was not only to train people in what behaviours to avoid, but also in what behaviours are appropriate. Effectively we developed a set of “standard” behaviours. This is normally done on a workshop/iterative basis.

STAGE 5 - DEVELOPING THE TRAINING PACKAGES AND PROMOTIONAL ITEMS

We believe that everyone in the organisation needs to be trained in the appropriate behaviours if this is going to work. As stated earlier, a key aspect of this type of program is that people’s behaviours are observed at work by their work colleagues, and commented upon.

Why is this so important?

This really brings us to the crux of this behaviour based program and why it can be very effective. It’s all about the establishment of consequences – positive consequences if the safe behaviour is observed, corrective feedback type consequences if an unsafe behaviour is being followed.

With over 2000 observations per year in Australia alone, and consequently 2000 opportunities to make positive observations or corrective feedback, on an employee-on-employee basis, this behavioural based process allows a continued and consistent focus on driving unsafe behaviours out of the business.

We also decided that, instead of training only a few observers, we would train everyone how to observe. This makes the process less threatening and enables the observation process to be used as a refresher for the training. Training packages thus need to be developed not just for the behaviours themselves but also on how conduct observations.

Observations themselves are conducted with the aid of a simple checklist that lists the behaviours and a space for recording whether the appropriate or inappropriate behaviour was observed.

CBI Observation Checklist

Observer:

Main Task:

Date:

1.0 Body Use	Appropriate	Inappropriate
1.1 Exertion/rushing		
1.2 Line of Fire		
1.3 Warm up		
2.0 Travel		
2.1 Ascending/descending		
2.2 Eyes on Path		
2.3 Look before moving		
2.4 Survey area		
3.0 PPE		
3.1 Hand/arm		
3.2 Eyes on hands		
4.0 Tools and equipment		
4.1 Use		
4.2 Selection		
4.3 Condition		
Comments:		
Open, Observe, Feedback, Agree Close (Sept 98)		

The behaviours can be added up and used to measure (predict) the likelihood of an accident from a particular type of behaviour.

Our training was based around a screenshow (which introduced the program, set the scene and described why we needed the program) and a video featuring our employees performing both appropriate and inappropriate behaviours. Stages 2, 3, 4 and 5 were all completed in seminars where we had representatives from cross-sections of the business (operations, technical, administration, senior managers and operators).

We also used the seminar to develop promotional items and train the participants as trainers.

STAGE 6 - IMPLEMENTATION

The next main stage was to train everyone across the business (over 600 people in Australia alone in over 70 locations).

This was achieved through several groups of people being trained to deliver the training package. These included plant supervisors (for remote sites), trainers, safety professionals, key office people and some managers.

The training sessions generally lasted about 6 hours

THE RESULTS

Safety statistics are very fickle at the best of times and finding correlations between safety programs and performance improvements can be problematic, with various contributions leading to performance improvement.

In Australia, after one year into the program we went back and analysed our previous four year's data and even we were surprised by the results. (see fig 9).

Our behavioural observation program appeared to have reduced our injury rate by 90 %.

Figure 9

	UO's	Incidents	Recordable Injuries	WW/C/C	Rehabilitation REHAB
97/98	2233	196	11	29	33
98/99	1558	177	13	26	26
99/00 *	1958	117	1	13	8
00/01	2059	136	5	12	7

CONCLUSIONS

In Orica we believe a behavioural safety program is essential in reducing injuries. It does take considerable effort and focus to mount such a program but it is well worth it.

The business must not forget however that focus on the less frequent but far more serious consequences of unplanned fires, explosions, process & field incidents must also be maintained whilst such a program is implemented.

ACKNOWLEDGEMENTS

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REFERENCES

Krause, Thomas R., (1997). Second Edition. The Behaviour-Based Safety Process: Managing Involvement for an Injury-Free Culture