SAFETY MANAGEMENT – SYSTEM OR CULTURE?

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SUMMARY

There is much talk and action around the development and application of comprehensive safety management systems (SMS). A range of commercial systems is available, most of which cover health and safety and many also cover environment. In Australia, many companies have adopted a commercial SMS or developed their own, yet NOHSC figures show that every day there is a fatal work-related injury in Australia. This paper examines some of the perceived advantages and disadvantages of SMS and attempts to "demystify" the management of health and safety. It is suggested that some commercial SMS may make safety management look technically complex while offering a "paint by numbers" solution that appears to be managerially simple. It is argued that the reality of safety management is the opposite – technically simple while demanding strong management and leadership. The importance of culture is discussed and its impact on safety examined. A twelve-step guide to achieving substantial safety improvement in the workplace is offered, which acknowledges the need for SMS but provides an appropriate contextual framework. While the steps are conceptually simple, they require clear and committed leadership and substantial management effort to achieve.

INTRODUCTION

Much attention has been directed at improving safety in the mining industry in Australia and throughout the world. The need for improvement in self-evident: mine-site incidents killed thirty-three people in Australia in the twelve months ending June 1997. This does not include the number of people killed by workplace induced illnesses, such as mesothelioma due to exposure to asbestos.

Many sites have introduced safety management systems (SMS) to improve safety performance. A number of proprietary systems are available from organisations such as NOSA, DNV Technica, Orica, HSE and NSCA. These systems are generally comprehensive in their coverage of safety and health issues and provide sound procedural and management tools for the management of health and safety. Alternatively, companies can develop their own system based on models contained in Australian and international standards.

Despite the fact that many mining companies have adopted SMS, mining still kills people. Many of these deaths have occurred in sites with detailed SMS in place, which begs the question: Are SMS necessary and sufficient for managing safety?

THE NEED FOR IMPROVEMENT IN SAFETY

There were thirty-three deaths due to workplace injury in Australian mines in 1996/7, nineteen in the following year and seven in the nine months to March 1999. [1,2] This loss of life alone should be sufficient to convince people of the need to improve safety in Australian mines, yet it is only part of the picture.

Any death due to workplace injury is unacceptable, however the concept of workplace fatality is foreign to many sites – "it won't happen here" may be the refrain. Yet all sites have injuries of some sort, the majority of which should not have occurred and many of which could have resulted in a fatality. Worksafe Australia statistics on workplace injury and disease for the year ending June 1994 reveal that mining had the highest rate of new compensation cases, at 67 lost time cases per thousand employees. This was over twice the national average rate for all industries.[3]

For the year ending June 1998, the lost time injury frequency rate (LTIFR)[1] across the whole mining industry in Australia was 15. [1] This is down from 27 in the year ending June 1994, from which the workers' compensation statistics quoted above derive. For the nine-months ended March 1999, the LTIFR for the mining industry was 10.[2]

The direct financial cost to the mining industry of these injuries and illnesses is significant. In 1993/4, the average insured cost of each new claim was A$7,900 [3], equating to a bill of around A$41 million in total. This does not

[1] Defined as the number of lost time injuries per million hours worked. A lost time injury is where the injured person is unable to work their next rostered shift. Note that some use 200,000 hrs as the denominator

include the hidden cost to industry for replacement labour, lost opportunity, retraining and so forth, estimated by some to be five or more times the insured cost. The statistics cannot show the other costs, both financial and emotional, to the injured persons and their families.

Mining industry medical treatment injury frequency rates (MTIFR)[2] are not available, however a rough estimate would be around two to ten times higher than the LTIFR.

To put these statistics into focus some comparison with other industries can help. In the chemical industries in Australia in 1996, there were no fatalities due to workplace injury, the LTIFR was 6.3 and the MTIFR was 18.7.[4]

Some may argue that such cross-industry comparisons are not valid because the inherent hazards are different. Mining has a greater inherent hazard of falling rock and moving machinery. The petrochemical industry has a greater inherent hazard of injury due to chemical agents, high-pressure steam and other fluids. Simplistically, the difference in the nature of the industries might account for a difference in the ratio of fatalities to LTI to MTI. It does not explain the much higher rates, for all indicators, found in the mining industry.

Performance in Australian mines is also poor when compared to the best performing mines elsewhere. The **average** LTIFR for surface coal mines in the USA was 9.2 in 1996, while six international Rio Tinto mines achieved LTIFRs of zero. [5] The benchmark performer of the mining industry is Phelps Dodge Corporation, with an overall LTIFR of less than one. [6] By any measure and any comparison, safety in Australian mines has to be improved.

SAFETY MANAGEMENT SYSTEMS

All SMS involve detailed procedures in an overall system, aimed at ensuring compliance with a set of rules regarding safety, health and environment management. There is an overarching policy statement and there may be one or more levels of detailed work instructions and forms below each procedure.

Claimed System Advantages

Proponents of SMS make various claims regarding the advantages of SMS in general and their system in particular. In general terms, the claimed advantages are:

- Comprehensive coverage of OH&S issues
- Auditable system – the SMS defines a standard and protocol to audit against
- Measurable – can be scored to provide a measure of input to safety
- Best Practice – built on the collective experience of others in similar or related industries
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- Improvement-focused – from both audits and user forums
- Effective. Some of the claims of the effectiveness of implementing SMS [7] include:
  - Reduced injuries and damages
  - Reduced direct costs of injuries
  - Reduced workers' compensation insurance costs
  - Improved morale, productivity and profitability
  - Improvement communication between management and staff

Specific vendors will make more detailed claims as they seek to differentiate their product. Yet few, if any, point out the potential pitfalls.

Potential Pitfalls of SMS

One of the problems with some systems is their complexity. For example, the NOSA system for mining contains over 70 elements. Other systems have a similarly large number of elements, each of which may then have a statement of intent or standard, a more detailed statement of requirements, perhaps in a procedure, with any number of work instructions, forms and other tools supporting it. The sheer volume of paperwork associated with many SMS is significant.

This complexity has two potential drawbacks. First, it makes safety and health management seem more technically complex than it really is. Senior management may therefore leave it

[2] Defined as above, where a medical treatment injury is one that involves treatment that can only be provided by a physician.

to safety professionals to implement it rather than taking direct ownership themselves, if they start at all. Such direct ownership and drive by management is essential for success, however.

Second, it makes the SMS appear to be "the answer" that people seek to improve safety. It is easy to be awed by the apparent technical complexity of the system and miss the fact that management and leadership are the essential ingredients to making it work.

System gaps are another significant concern, the more so if the SMS is seen as a cure-all. If a site manager feels that the SMS will do everything, he or she is unlikely to look further. Yet few commercial SMS pay sufficient, if any, attention to several areas of major potential hazard. The design of new plant on a greenfield site is not a topic covered in most SMS, yet getting it right here is critical to long term performance in all areas. Similarly, modification to existing plant has the opportunity to introduce major safety issues, yet this area is largely ignored. The overall management of such projects and of the construction and commissioning phases are also important but often left out or treated minimally.

That new plant design, modification and construction are left out of a commercial SMS may not in itself be a problem. Suppliers would argue they are outside the scope. The problem arises if an organisation's management fails to note the gap and take appropriate action.

Another potential pitfall of commercial SMS is the "one size fits all" approach. Substantial effort is expended in creating a system and, in most cases, most of the information in them is valuable. This does not mean that it should be applied equally to all workplaces. Each site is different and will have a unique set of needs and opportunities.

Most suppliers recognise the need to pay close attention to the initial implementation and scoping, but the danger remains that the SMS can be seen as a universal cure.

Similarly, each site has a unique culture. It may be positive – in that it helps the business achieve its objectives – or destructive. Regardless, it must be taken into account when implementing a change program. The intervention used, such as a SMS, must work with the existing culture and drive towards the desired culture for it to be effective in the short and long term. This implies that some SMS may not suit some sites. A SMS that is isolated from the company structure and culture will fail to deliver results.[8]

There has also been recent criticism of the effectiveness of commercial SMS. A review of the ISRS, based on experience in several countries, concluded that "there is little support for the claim that the ISRS is an effective means of accident control." [9]

In summary, potential areas of concern in SMS are:

- System complexity – implies safety management is technically difficult
- System thinking – implies safety management is managerially easy
- Significant system gaps, despite claims of being "comprehensive"
- One-size-fits-all approach – the apparent belief that the same SMS can work in any workplace, regardless of industry type and existing workplace culture
- Not delivering safe workplaces

The underlying problem is that the SMS is seen as "the answer" rather than as part of the overall approach. SMS are necessary, but they are not sufficient. They may not even be at the top of the priority list.

SAFETY CULTURE

Culture can be defined as that mix of "shared values, attitudes and patterns of behaviour that give an organisation its particular character", or simply "the way we do things round here". [9] Culture serves as a "control mechanism that guides and shapes the attitudes and behaviour of employees" and as such defines the way that employees approach safety. Culture can be dysfunctional if the shared values of the employees are not aligned with the values and objectives of the organisation. [10] If the workplace culture does not encourage, support and value safety, no SMS can succeed in improving. As each new safety procedure or initiative is introduced, the reigning culture will determine new ways to avoid complying and continue doing things "the way we do things round here".

Culture operates at several levels that must be considered when driving safety improvement. The culture established within workgroups and

teams can be very strong. It must be socially acceptable for people to do things in a safe manner but culture can prevent this. Changing culture at this level involves resetting norms and standards at the group and individual levels.

Another level of culture is how the organisation is managed and what systems and processes are in place. One of the key factors that drives culture within a workgroup is how people are rewarded for performance. Many companies still operate on the basis that reward is primarily pay, while additional praise and non-financial rewards may be given for productivity. Such rewards are the "personal profit" that people derive from selling their labour. [11] The organisational culture can set people up to be injured if the risk of losing a reward (or being punished for lost production) is greater than the perceived risk of an unsafe act. Change at this level is about leadership and management systems and practices.

If the current culture in an organisation works against safety then the implementation of an SMS alone will not markedly improve safety. Cultural change is essential but, as with SMS, it is not sufficient on its own. There are several other essential principles involved.

PRINCIPLES OF MANAGING SAFETY

Before trying to implement a SMS to improve safety, it is important to understand the essential principles of safety management. The first point to recognise is that management of safety is fundamentally the same as the management of any other workplace issue. It is equally important to realise that it is fundamentally different to the management of strict business issues with no (or little) impact on the workplace.

They key point of difference is people. Management of foreign exchange risk, for example, is a technical exercise. It can be done without involving the workforce at large. A strategy can be chosen and implemented virtually by one person, based on sound advice, study of the market conditions and perhaps a degree of educated guessing. The success or failure depends on the actions of those managing the process and market forces.

Management of safety is fundamentally different because people are inextricably involved in the process. Regardless of how good a SMS is it will fail to deliver improved safety if people do not want to follow it. To achieve significant improvements in safety a change in workplace culture is required, so that safe behaviour becomes the way things are done.

Commitment

The commitment of senior management is an absolute requirement for the success of any change program. This is more critical where people are involved – being seen to be committed is as important as commitment itself. Unless people see their leaders consistently living the safety message they will treat the new drive as another fad. Leaders must also carry commitment through to ensure that other management systems and procedures are consistent with working safely. Senior management commitment is vital in any health and safety program.[12]

Involvement

Given that people are a necessary part of the success of a SMS it would appear to be sensible to involve them directly. Too often, the implementation of a SMS is a top down affair. The first thing that the majority of employees know of the process is when they are whisked off for training and told to comply with the new two volume set of doorstops they are issued with.

As with any change process in the workplace, the people must be involved at the start. Involvement should include all people in the organisation – rank-and-file employees, supervisors, managers, the CEO and the board. If there is a union present include it also. If there is an industry representative body, involve it too. Substantial improvement in safety – and other factors – can flow from involving the workforce even without a SMS.

Cultural Change

To improve safety it is necessary to change culture, as discussed above. To change culture in an organisation is not easy to achieve, but a consistent and considered approach will produce results. First, understand the existing culture and how it is different from what is desired. Are people thinking about safety? What do people think is acceptable – ten injuries a year? One? Zero? What do they think is achievable? What are the rewards and punishments that impact on safety? Look at the formal structures as well as the informal. Few companies openly sanction violation of safety rules, yet many

push for increased production or quality in the knowledge that it cannot be done without taking risks.

Second, create the drivers for change. Unless people feel more uncomfortable with the way things are than they do about the perceived pain of the change, nothing will happen. Management must model the required behaviour. Create dissonance between the way things currently are and the way they should be by making changes. Change reward systems; establish and enforce new rules; shake up dysfunctional culture by job rotation and targeting of natural leaders. Create a climate of trust and select and promote people who have the right values and attitudes. [10] Weaken the appeal of the existing culture to create dissatisfaction.

Third, create the environment for lasting change to occur. Implementing the SMS is only part of the equation. Review all business and management systems to consider how they impact on safety. Reward and punishment systems must be consistent with what is trying to be achieved. Examine systems for promotions, pay rises, bonuses and other less structured systems of recognition and praise.

It is important to ensure that the SMS – and other systems – recognise that people are not robots. It is not a matter of issuing instructions and then expecting it to happen. People generally want to be actively involved in work and to use their brains and creativity. Too often, this is stifled by systems that allow no flexibility. One response is to become a robot, requiring detailed programming for every task thus making the job of management harder. A more sinister response is to find ways of causing the system to fail, or to find new and creative ways of beating the system. Both responses can result in increased injuries. To avoid either of these responses, the SMS should only be strict and inflexible when the risk warrants it. It should also be as simple as possible without compromising standards. .

Goal setting and feedback programs are effective interventions for driving cultural change. [9,13] Such programs are proactive rather than reactive. Clearly defined, measurable and achievable goals are set in cooperation with the workforce. Prompt, accurate and meaningful feedback is then provided on progress towards the goal. Change in behaviour and attitude – or culture – has been shown as a result of such programs.[9]

Training

People at all levels of the organisation need to be equipped with sufficient and appropriate knowledge for them to contribute to maintaining a safe and healthy workplace. At the management and supervisory level, training should cover:

- Managing people for safety. How to motivate people to work safely, both at individual and group levels.

- Safety supervision skills. Especially for line management. This should cover basic auditing skills, training and coaching skills, and the correct use of reward and punishment.

All employees, including managers, should receive appropriate training in:

- Legal responsibilities. This should cover common law obligations (general duty of care under common law) and specific obligations under the applicable occupational health and safety act and related legislation.

- Moral and ethical drivers for safety. This will be a reflection of company values and should recognise that different ethnic and social backgrounds can yield different views on morals and ethics.

- Hazard identification, risk assessment and control tools appropriate to their role. These can range in complexity from simple observation methods through to detailed quantitative methods.

- Job-specific safety requirements. The emphasis is on job-specific. This training should make employees aware of the known hazards in their area or line of work.

- Behavioural programs. There are several programs available that focus on developing safe behaviour. Many companies find that after two or three years with one program the returns diminish, so changing to another program may be appropriate.

- Workplace observation and auditing skills. This focus should be on the individual's own working environment.

Hazard Management

With the exception of some of the training elements, the above three principles do not relate specifically to safety. This is deliberate – there is nothing mystical or special about safety management. The specific technical element is hazard management, summarised using the abbreviation HIRAC – hazard identification, risk assessment and control. This should be the heart of any safety and health management system. There are three elements:

- Identify the hazards in the workplace
- Assess the risk – qualitatively is usually sufficient, but quantitative methods are available
- Eliminate, reduce and control – apply the hierarchy of controls: eliminate, minimise, protect

This basic HIRAC model can be applied equally in routine operations, changes to existing operations, design and development of new plant and during construction. The SMS should derive from the control measures identified for the site, not a preset list of elements. Note that the SMS is therefore towards the bottom of the hierarchy of controls, not the top.

12 STEPS TO IMPROVED SAFETY

Many of the following steps are difficult and complex and have no universally correct method to follow. They are not necessarily chronological, although there is some logic to the flow. In implementation, however, management will find that it has to work on more than one step at a time, or return to an earlier step that appeared to have been completed.

Workplace Culture

Get the workplace culture right, or at least moving in the right direction. Focus on:

1 **Management commitment.** Unless there is clear, visible and communicated absolute commitment from the entire management team, employees will see it as just another fad. Management must be effective role models of desired behaviour at all times

2 **Involvement of all stakeholders.** The importance of involving the employees has been discussed. Other stakeholders may also play a part or have some interest and should be at least informed if not invited to participate: the statutory authorities; shareholders; local community; employees' families; customers; suppliers

3 **Strong leadership.** Leadership can be positional, such as the CEO or a supervisor, or personal – someone people look at to set the pace. Ensure that the formal leadership in the organisation is fair, honest and firm, and that all leaders share the same values and goals for the program. Identify informal leaders and gain their commitment and support.

Establish a System

A safety management system is required. It should be as simple as possible and should not be seen as The Solution. It is a necessary part, but only a part.

4 **Identify the controls.** Apply HIRAC to the operation through appropriate workshops and studies. The controls will be organised into a SMS. Ensure existing controls – both formal and informal – are identified. Building on existing controls increases ownership and reduces resistance.

5 **Develop the system.** Look at commercial SMS packages and choose one that is 80% right for your industry and your culture, or develop your own. If using a commercial package, add and subtract elements as required. Simplify as far as possible – the second draft should be half the size of the first. Focus on concepts and on asking people to think about safety. Be prescriptive only when necessary and explain why.

6 **Implement.** The structure and enabling policies and training should be implemented with some clear signal and fanfare. Don't wait until all the details are in place before launching – prepare people for a staged implementation based on identified risks.

Make it Work

Don't expect overnight success. Be prepared to work at it for as long as it takes. Some tips:

7 **Ignore the ratings.** For example, if the package chosen uses a five star rating system or gives scores out of 100, ignore

them. Get the audits and the feedback but focus on implementing the things that matter. A "three star" rating can be achieved without actually improving safety – and the workforce will see through this immediately

8 **Be honest and open** with the workforce. Share the successes and failures honestly. Involve people in examining failures and identifying alternatives.

9 **Be consistent and diligent.** When things don't change overnight, don't give up. Many cultural change programs take years to bear fruit. Expect some opposition and prepare to resist it. Be careful in evaluating progress – use a range of indicators including surveys of employee attitudes and perceptions.

Review and Improve

The final three tips focus on the ongoing effort required to keep the safety program alive.

10 **Audits.** There must be regular audits of the program, of which the SMS is a part. Three types of audits should be considered:

- A management system audit focuses on overall system "health" and management involvement and action. Initially these should occur every six to twelve months, reducing to perhaps every two years. They are largely desktop and interview based with minimal field verification.

- Specialist audits focus in on what the system actually requires. They ask two key questions: is the system element appropriate for the hazard at this site? Is the system element being implemented effectively? A frequency of once a year initially, stretching out to once every three or four years once the system is well established, is recommended. These audits require people with specialist skills in the fields being examined together with sound auditing skills. These audits require substantial verification effort.

- Local audits carried out by employees. These are verification audits and can often be done using checklists. The frequency can be set individually for each element, depending on the risks involved and the strength of the element. Basic training in auditing skills should be provided. They focus on ensuring that what the system requires to be done is being done.

Each type of audit will generate actions, which should be objective, specific and based on clear evidence. Management must ensure that appropriate systems are in place to ensure actions are implemented appropriately. Note that actions can be rejected if clear reasons can be provided.

11 **Improvement teams**. There are many ways to structure these. They may be ad-hoc in response to a perceived opportunity or routine. They should not be allowed to take control of the agenda on safety, however, or become too bureaucratic.

12 **Celebrate wins** and learn from losses. People – including managers – tend not to notice progressive changes. Ensure that changes for the better are noted and publicised. Small "celebrations" for each step are appropriate and may be as simple as a paragraph of text and a photo in the company magazine. Avoid being too dramatic or glamorous – people tend to have adverse reactions to glossy publications that sing the praises and are silent on the problem areas. Ensure that problems are acknowledged and investigated so that they can be capitalised on.

CONCLUSION

The current level of safety performance in Australian mining is unacceptable by the standards society applies today. It may not be the worst performing industry overall, but the number of deaths due to injury and illness alone demand action.

The management of health and safety requires strong leadership and commitment from the management team. Technically, the process is simple: identify the hazards, assess the risk and implement controls. Specialist expertise is required for only a small part of it. The challenge is in the leadership – making it happen.

Substantial and lasting improvement in safety requires a cultural change in most workplaces. Yet it is not appropriate to accept the current level of death and injury on the basis that improvement will take time. Management must accept the responsibility of leading their organisations' through the changes necessary

to achieve change. It starts by saying that the current situation is unacceptable.

Management commitment is a far more significant factor than the brand of SMS chosen. Second to this commitment would be management honesty throughout the process, followed by the open involvement of the workforce and other important stakeholders.

The process is technically simple as the 12-steps outlined above show, but demands commitment and leadership. There is no point starting unless you're serious. Given the state of safety in Australian mines, it is clearly time to get serious.

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