NOHSC
National Occupational Health & Safety Commission

OHS SOLUTIONS

# Occupational Health and Safety Management Systems

## A REVIEW OF THEIR EFFECTIVENESS IN SECURING HEALTHY AND SAFE WORKPLACES

APRIL 2001

# Occupational Health and Safety Management Systems:

## A Review of their Effectiveness in Securing Healthy and Safe Workplaces

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A report prepared for the
National Occupational Health and Safety **Commission**

**April 2001**

**National Occupational Health and Safety Commission**
**Sydney**

ISBN 0 642 70981 5

# FOREWORD

In seeking to achieve Australian workplaces free from injury and disease NOHSC works to lead and coordinate national efforts to prevent workplace death, injury and disease.

We seek to achieve our mission through the quality and relevance of information we provide and to influence the activities of all parties with roles in improving Australia's OHS performance.

NOHSC has five strategic objectives:

- improving national data systems and analysis;
- improving national access to OHS information;
- improving national components of the OHS and related regulatory framework;
- facilitating and coordinating national OHS research efforts; and
- monitoring progress against the National OHS Improvement Framework.

This publication is a contribution to achieving those objectives.

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# EXECUTIVE SUMMARY

This Report reviews the effectiveness of occupational health and safety management systems (OHSMS) in Australia and the barriers to their implementation. The need for such a review stems from the growing number of organisations using OHSMS and from criticism of the value of audit based models and the capacity of OHSMS to undermine independent employee OHS representation. The Report was required to address four questions.

**1. How effective are OHSMS in delivering improved OHS outcomes?**

The research and consultations reviewed in this Report suggest OHSMS can deliver more healthy and safe workplaces under the right circumstances. The consultations with experts revealed examples of successful OHSMS; indirect evidence relating to similar innovations shows they can deliver results; and the research of Gallagher (2000) provides evidence of superior OHS performance in firms with a dominant 'safe place' control strategy and 'innovative management' structure and style. The likelihood is that OHSMS can deliver better OHS outcomes, although the volume and quality of direct research on this issue remains limited. The research and consultations strongly indicate that such success is conditional upon a range of factors, including the kind of system used, senior management commitment, integration into general management systems and effective employee participation. OHSMS can succeed, but in the wrong circumstances they will also fail.

**2. What barriers exist to OHSMS success?**

Research and consultations with OHS experts identify three kinds of barriers to OHSMS success. These relate primarily to the way that OHSMS are being implemented in Australia. Perhaps because of their increasing popularity, their introduction often occurs under inauspicious circumstances. The barriers are:

i. Failure to meet necessary conditions for OHSMS success (by not customising systems to organisational needs, imposition without consultation, weak senior management commitment and poor employee involvement).

ii. The inappropriate use of audit tools (where they become an end in themselves, are governed by misplaced management objectives, and are conducted without sound auditor skills, standards and criteria).

iii. Application in hostile contexts (small business, precarious employment, contractors and labour hire companies).

The evidence from the consultations suggests that many applications of OHSMS are likely to fail for these reasons. One common concern is that OHSMS may then get a bad name as another 'failed fad'. For this reason it may be necessary to address voluntary means to improve understanding in industry of the proper nature of OHSMS, of the necessary conditions for success (including senior management support and employee involvement), of the existence of a range of types of system for different settings, and the necessity to customise workplace applications. The factors contributing to effective OHSMS and the barriers to effective OHSMS are summarised in the table overleaf.

| Factors Contributing to Effective OHSMS | Barriers to Effective OHSMS |
|---|---|
| **A. Type of System** | |
| Customised to organisation's needs | Off-the-shelf system imposed without modification |
| Developed with support and involvement of all organisation stakeholders | Imposed by senior management without consultation |
| Safe place/Innovative system | Safe person/Traditional system |
| **B. Internal Organisational Factors** | |
| **(i) Management Commitment** | |
| Strong senior management involvement | Delegation of OHS responsibility to line & OHS management positions |
| OHSMS introduced to improve OHS | Introduced & supported for non-OHS reasons |
| Provision of adequate resources | Inadequate resources |
| OHS integral to management performance appraisals | Limited accountability mechanisms |
| Leading by example | Words unsupported by practice |
| **(ii) Integration into Management Systems** | |
| All organisational functions incorporate OHS | OHSMS activities marginalised |
| **(iii)Employee Involvement** | |
| All employees encouraged and capable of participation | OHS restricted to 'technical' experts<br>Inadequate training of employees in OHS & in consultation |
| Independent representation of employees encouraged and supported | Selective employee involvement at management's discretion |
| **(iv) Workforce Characteristics** | |
| Stable workforce | High labour turnover, extensive casual and part-time workforce<br>Reliance upon and exclusion of labour hire employees from OHSMS |
| **C. Nature of Organisation** | |
| Larger organisation familiar with systems and with adequate resources | Small business, with limited resources and unfamiliar with systems concept |
| Stable workplace | Labour hire company with employees working between multiple client sites<br>Disorganisation of work associated with presence of labour hire employees and contractors |
| **D. Contractor Relations** | |
| Principal contractor works with subcontractor to develop compatible OHSMS | Principal contractor simply requires subcontractor to have OHSMS<br>Principal contractor simply imposes their OHSMS on subcontractor<br>Sub-contractor's OHSMS inconsistent with principal's OHSMS |
| **E. Audits and Audit Tools** | |
| Appropriately used audits can verify and validate OHSMS and facilitate continuous improvement | Inappropriately used audits encourage 'paper systems' and an instrumentalist approach to OHSMS |
| Adequate audit tools are tailored to organisational needs and reflect key OHSMS success factors | Inadequate audit tools support mediocre OHSMS |
| Audit processes are robust and auditors are technically competent | Quality-style audit processes and inadequate auditor skills limit audit comprehensiveness |
| Audits are integrated within a comprehensive approach to measurement | Use of audits as the primary measurement tool |

### 3. Lessons from Quality Management for OHSMS measurement and evaluation

Research upon Quality Management (QM) supports the continued development of OHSMS. Close similarities exist between QM and OHSMS and between Quality Assurance and OHSMS auditing. There is now considerable evidence to suggest that QM interventions improve business performance if the right conditions are met. It is plausible to conclude that a similar approach to continuous improvement in OHS should pay off. There are also lessons to be learnt from QM about performance measurement.

### 4. How can OHS outcomes and OHSMS performance best be measured?

OHS outcomes and OHSMS performance are not easily measured. The complexity of OHS is such that simple quantified measures are often inadequate and traditional incident/claims data has also proved unreliable. Whilst there is agreement on the need to improve basic injury/illness/claims data, the main need is to develop supplementary measures. In recent years, increased attention has been given to positive performance indicators and audit tools as measures of some aspects of OHSMS performance. However, such data can also prove difficult to interpret and to integrate. A Balanced Scorecard approach tailored to the special characteristics of OHSMS is advocated as an effective way of combining multiple measures, and reflecting different stakeholder interests in an operational OHSM plan.

## Future Developments

The findings of this Report point to the need for further development of public policy on OHSMS. Firstly, our findings suggest any departure from the voluntary approach to the use of OHSMS be treated with caution. The experts consulted for this review identified a range of problems with OHSMS adopted to meet external requirements. Secondly, we found that the conditions for OHSMS effectiveness are demanding, and that many businesses are claimed to fall short. Until business develops a better understanding of the conditions for success, it is likely that mandatory systems or incentives to adopt systems will mainly increase the number of businesses with ineffective OHSMS.

The strength of concern expressed in consultations suggests the need for a fundamental re-evaluation of how OHSMS are promoted and how to support their effective implementation. The critical issues emerging from this Report that can inform such a review are the need for:

- Promotion of the establishment of effective OHSMS in the first place, rather than promotion of audit tools to support their measurement.

- Guidelines on establishing 'Best Practice' OHSMS to include:
  - the known conditions for success - effective senior manager and employee involvement, and effective integration with broader systems
  - effective hazard management
  - tailoring to specific organisational needs.

- Promotion of traditional legislative approaches to effective OHS hazard management where 'Best Practice' OHSMS cannot be achieved.

# 1. INTRODUCTION: THE NEED TO EVALUATE OHSMS EFECTIVENESS

Occupational Health and Safety Management Systems (OHSMS) have been defined by Gallagher as "*…a combination of the planning and review, the management organisational arrangements, the consultative arrangements, and the specific program elements that work together in an integrated way to improve health and safety performance*" (Gallagher, 2000:1). They differ from older methods in several ways. First, like the Robens reforms, they make those in the workplace more responsible for occupational health and safety (OHS). But, unlike the Robens reforms, this responsibility is discharged through an integrated management system rather than ad hoc structures and prescriptions.

Over the past decade the use of OHSMS has become common in workplaces both in Australia and other developed economies. Their growing use can be attributed to many factors. Overseas they evolved as a response to defective management systems exposed by disasters such as the Piper Alpha oil rig fire. Perhaps too they represent a natural evolution of the workplace focus on OHS that began in the 1970s with the Robens reforms. In particular OHSMS embody the application to occupational health and safety of the principles of 'continuous improvement' or 'quality management' which have been used extensively by enterprises seeking improved business competitiveness. Since the principles of OHSMS closely resemble methods such as Total Quality Management (TQM), it is probable that experience with the latter has formed a basis for new applications for the specific purposes of removing workplace hazards and improving safety consciousness. Developments of this kind are now encouraged by a substantial support industry which includes employer associations and consultancy businesses that have developed proprietory OHSMS such as the Du Pont and NSCA Five Star systems.

The growing use of OHSMS also stems from public policy. Whilst in Europe such policy interventions span both mandatory and voluntary approaches, Australian state and territory governments have focused more on the latter. Recommended criteria for an OHSMS have been developed and publicised by government agencies (for example SafetyMAP in Victoria). In addition some state governments offer incentives by allowing businesses the option of 'self-insurer' status where they can demonstrate (by meeting audit criteria) successful implementation of an OHSMS (for example the South Australian Safety Achiever Business System).

The growing use of OHSMS shows both a choice of one kind of OHS intervention in preference to others and a significant investment of financial and human resources by both government and business. Are these choices and investments soundly based upon evidence that shows the value of OHSMS?

Lending urgency to the need to resolve this question are two contemporary criticisms of the Australian experience with OHSMS. First is the problem of 'paper compliance'. Introducing an OHSMS often entails compliance with a complex set of 'audit' criteria. Such audits are frequently criticised because they become an end in themselves, and are said to distract industry from the ultimate objective of improving health and safety. Does 'ticking a box' on an audit form to signify implementation of an OHSMS actually reveal genuine attention to real hazards and dangers in the workplace? Many critics say not.

A second criticism is expressed by some trade union experts who object that management control of OHSMS weakens or removes the independent exercise of union and employee rights that is at the heart of effective health and safety protection. Employees are said to have the strongest direct interest in OHS, and should be free to voice and defend their rights if genuine improvements are to be made in OHS performance. According to union critics, OHSMS inhibit employee input and are used to marginalise independent employee OHS representation.

**These questions and criticisms form the 'backdrop' to this project, initiated by the National Occupational Health and Safety Commission to report on:**

1) How effective are OHSMS in delivering improved OHS outcomes and what constraints there might be; and

2) How best to measure the performance and effectiveness of OHSMS in securing healthy and safe workplaces.

**Consistent with these broad aims, the Report seeks to address the following questions:**

(i) How effective are OHSMS in delivering OHS outcomes?

(ii) What barriers exist to OHSMS performance?

(iii) How can OHS outcomes and OHSMS performance best be measured?

(iv) What lessons can be learnt from Quality Management, Best Practice and High Performance Work Organisation upon the evaluation and measurement of OHSMS?

The consultants were required by their terms of reference to base the Report upon information taken from two sources. First is a review of literature relevant to the four questions, including Australian and international research into both OHSMS and quality management. Second are consultations with Australian experts on OHSMS, including employer and trade union representatives, public officials in Australian states and territories, and leading academics and consultants with knowledge and experience of OHSMS. The experts were selected for their knowledge of the Australian experience with OHSMS. The key stakeholders and experts who were consulted are listed in Appendix 1. Their views are extensively cited throughout the Report. New research on these questions fell beyond our terms of reference which required us to synthesise current knowledge rather than add to it.

The plan of the Report is as follows.

# Plan of the Report.

**The Report falls into seven parts:**

1) Section 2 of the Report identifies what an OHSMS is. It shows that they are established for several reasons, take different forms, and exist at various stages of development. Any account of their performance must recognise this diversity.

2) Section 3 of the Report deals mainly with our first question (how effective are OHSMS in delivering OHS outcomes?). Research evidence on this question is reviewed as well as the views expressed in expert consultations. Whilst evidence is scarce, the prevailing view is a conditional one – that OHSMS only deliver results under certain circumstances, which we discuss. At the end of Section 3, the Report turns to our second question - the barriers to OHSMS performance. We deal with those which arise in the absence of the positive conditions required for their success.

3) In Section 4, OHSMS audit is discussed. Whilst audit processes have done much to spread the use of OHSMS, some aspects of audit can also become a barrier to their operational effectiveness unless corrected.

4) In Section 5, we discuss a further barrier to success - those parts of the workforce, such as small business, where OHSMS implementation is claimed to be especially difficult.

5) Section 6 of the Report deals with our fourth question (what lessons can be learnt from Quality Management, Best Practice and High Performance Work Organisation on the evaluation and measurement of OHSMS?). Such practices can resemble OHSMS. Do they work, and to what extent have transferable solutions been found to the problem of evaluating and measuring systems?

6) Section 7 of the Report looks at our third question - the problems of measuring OHSMS performance. What difficulties exist with conventional OHS measures, what can OHSMS audits measure, and are alternatives such as Positive Performance Indicators and a Balanced Scorecard a solution?

7) The Report concludes with a discussion of two issues. First, we summarise our findings on the effectiveness of OHSMS and the barriers to them. Second, we identify further research needs.

# 2. WHAT IS AN OHSMS? DEFINITIONS AND DIVERSE FORMS

What is an OHSMS? One difficulty in evaluating the effectiveness of OHSMS lies in the different meanings given to the term. Finding agreement upon criteria for effectiveness, or methods of measurement and evaluation is especially hard where basic disagreement exists upon what an OHSMS is. This Report adopts an inclusive approach to the meaning of OHSMS, recognising the many distinctions drawn in the literature as evidence of their diversity.

The following discussion of the definition of OHSMS falls into eight parts. It begins by listing general characteristics of all OHSMS. Second, it distinguishes voluntary and mandatory methods of implementation. Third and related, is a distinction between OHSM 'systems' and 'systematic' OHSM. Expanding on the former, the fourth part compares managerialist and participative types of OHSMS. Fifth, a more comprehensive framework for categorising organisational forms of OHSMS is introduced. It is based on Gallagher's (2000) cross-typology using control strategy and management structure/style as variables. Sixth, OHSMS are scaled according to the degree of implementation on an ascending hierarchy of quality levels. Seventh, a further developmental framework is introduced based on the implementation of continuous improvement projects. Eighth and finally, the Section closes by summarising the dimensions on which OHSMS vary, and pointing out implications for evaluation and measurement.

## 2.1 The General Characteristics of an OHSMS

All OHSMS owe something to the legacy of general systems theory (for example, Talcott Parsons' proposition that the most general and fundamental property of a system is the interdependence of parts or variables). Systems theory suggests that there should be four general requirements for an OHSMS, although how these requirements are met in practice allows for considerable diversity. The four general requirements are as follows:

- System objectives (for OHSMS these may be ethical, economic, legal and organisational goals; not all systems need have the same objectives).
- Specification of system elements and their inter-relationship; not all systems need have the same elements.
- Determining the relationship of the OHSMS to other systems (including the general management system, and the regulatory system, but also technology and work organisation).
- Requirements for system maintenance (which may be internal, linked to a review phase, or external, linked for example to industry policies that support OHS best practice; system maintenance may vary between systems).

Several Australian authorities upon OHSMS have given definitions broadly consistent with these general system requirements. Thus Bottomley notes what makes an OHSMS a system *'is the deliberate linking and sequencing of processes to achieve specific objectives and to create a repeatable and identifiable way of managing OHS. Corrective actions…(are also) central to a systematic approach'* (Bottomley, 1999:2).

Warwick Pearse (UWS) also emphasises systemic linkages, defining an OHSMS as *'distinct elements which cover the key range of activities required to manage occupational health and safety. These are inter-linked, and the whole thing is driven by feedback loops'.*

Similarly, Gallagher defines an OHSMS as *'…a combination of the planning and review, the management organisational arrangements, the consultative arrangements, and the*

*specific program elements that work together in an integrated way to improve health and safety performance'* (Gallagher, 2000). The specific elements of an OHSMS entailed by her broad definition are as follows:

## Elements of an OHSMS

**Organisation, Responsibility, Accountability**
Senior manager/involvement
Line manager/supervisor duties
Management accountability and performance measurement
Company OHS policy

**Consultative Arrangements**
Health and safety representatives - a system resource
Issue resolution - HSR/employee and employer representatives
Joint OHS committees
Broad employee participation

**Specific Program Elements**
Health and safety rules and procedures
Training program
Workplace inspections
Incident reporting and investigation
Statement of principles for hazard prevention and control
Data collection and analysis/record keeping
OHS promotion and information provision
Purchasing and design
Emergency procedures
Medical and first aid
Monitoring and evaluation
Dealing with specific hazards and work organisation issues
(Gallagher, 1997:37)

These elements are said to be widely found in both commercial programs (e.g. NSCA Five Star) and OHS agency programs (e.g. SafetyMAP) (Bottomley, 1999:3). A number of Australian authorities on OHSMS observe stringent definitional requirements of this kind in their approach to OHSMS.

## 2.2 Voluntary or Mandatory Implementation Methods

One way that OHSMS differ arises from the various methods of implementation. Frick and Wren (2000:38) distinguish three types – voluntary, mandatory and hybrid. Voluntary systems exist where enterprises adopt OHSMS on their own volition. Often this is to implement strategic objectives relating to employee welfare or good corporate citizenship, although there may be other motives such as reducing insurance costs. In contrast, mandatory systems have evolved in a number of European countries (Denmark and Norway) where legislation requires adoption of a risk assessment system. Quasi-mandatory methods may also exist where external commercial pressures take the place of legislative requirements. Thus many businesses adopt OHSMS to comply with the requirements of customers and suppliers, principal contractors and other commercial bodies. Hybrid methods are said to entail a mixture of voluntary motives and legislative requirements.

## 2.3 Management Systems or Systematic Management

Following from their distinction between voluntary and mandatory OHSMS, Frick and Wren also separate occupational health and safety 'management systems', and the 'systematic management' of occupational health and safety. Specifically, the former have been characterised as:

> *market-based, promoted typically by consulting firms, and with usually highly formalised prescriptions on how to integrate OHSM within large and complex organisations and also comprehensive demands on documentation* (Frick et al., 2000:3).

This 'management systems' form must meet stringent criteria. Where these requirements of a 'system' are not met, then the term is said to be inapplicable. On the other hand, 'systematic management' is described as *'…a limited number of mandated principles for a systematic management of OHS, applicable to all types of employers including the small ones'* (Frick et al., 2000:3).

This approach stems from methods of regulation found in Europe as well as Australia, where businesses (including smaller ones) are encouraged or required to comply with a less demanding framework than 'management systems'. One example of this simpler regulatory framework might be the risk assessment principles within the 1989/391 European Union Framework Directive.

Support for such a loose approach to OHSM also exists in Australia. One employer expert on OHS defined systems simply as *'just a word for what you do to manage safety'* (Tim Burrows, VECCI). Consistent with this is Bottomley's all-encompassing approach which allows that *'…an OHSMS can be simple or complex, it can be highly documented or sparingly described, and it can be home grown or based on an available model'* (Bottomley, 1999:2).

An example of a relatively simple 'systematic' approach to the management of occupational health and safety is to be found in 'Small Business Safety Solutions' - a booklet for small business published by the Australian Chamber of Commerce and Industry (ACCI, 1999).

This advocates a four step process as follows:

Step 1: Commitment to a Safe Workplace (framing a policy based on consultation).

Step 2: Recognising and Removing Dangers (using a danger identification list).

Step 3: Maintaining a Safe Workplace (including safety checks, maintenance, reporting dangers, information and training, supervision, accident investigation, and emergency planning).

Step 4: Safety Records and Information (including records and standards required to be kept by law).

It is debateable whether such a framework for 'systematic management' in a small business can include all the elements of planning and accountability that are essential to a 'management system' in a large business.

## 2.4 System Characteristics: Managerialist and Participative Models

Within 'management systems' two different models can be found. The first variant stems from what Nielsen terms 'rational organisation theory' (Taylorist and bureaucratic models of organisation) (Nielsen, 2000:100). Rational organisation theory is associated with top down managerialist models of OHSMS such as Du Pont. Some authorities now consider most voluntary systems to be managerialist. Thus Frick. et al. observe that *'…most voluntary OHSM systems define top management as the (one and only) actor'* (Frick et al., 2000:6).

Conversely, an alternative participative model of 'management systems' can be traced to socio-technical systems theory, which emphasises organisational interventions based on analysis of the inter-relationships of technology, environment, the orientation of participants, and organisational structure. The socio-technical systems approach is associated with participative job design. In Australia, socio-technical systems theory influenced the 'Best Practice' approach to organisations. These policies were translated to OHSM in a model which prescribed facilitative external interventions to assist worker involvement through self managed work teams whilst using positive performance indicators to manage outcomes advantageous to all parties (Blewett & Shaw, 1995; Shaw & Blewett, 1995, 2000).

## 2.5 System Characteristics: Control Strategy and Management Structure/Style

A more comprehensive approach to differentiating systems is Gallagher's classification of systems type (Gallagher, 2000:79-83). Theoretically, the types identified all meet the basic requirements of an OHSMS - a formalised management system to improve OHS comprising a complex set of inter-related program elements. However, the four are distinguished first by different OHS control strategies and second by different management structures and styles. OHS control strategies are categorised as either 'safe person' or 'safe place'. Management structures and styles are either 'traditional' or 'innovative'. These are explained below.

### System Types

**Safe Person Control Strategy**

- Prevention strategy focused on the control of employee behaviour

**Safe Place Control Strategy**

- Prevention strategy focused on the control of hazards at source through attention at the design stage and application of hazard identification, assessment and control principles

**Traditional Management**

- The key persons in health and safety are the supervisor and/or any OHS specialist
- A low level of integration of health and safety into broader management systems and practices (for example, integration of OHS within general procedures or inter-functional activities)
- Employees may be involved, but their involvement is not viewed as critical for the operation of the OHSMS, or alternatively a traditional health and safety committee is in place

**Innovative Management**

- Senior and line managers have the key role in health and safety
- A high level of integration of health and safety into broader management systems and practices (which connect OHS to business planning, or quality/best practice management initiatives)
- Employee involvement is viewed as critical to system operation and there are mechanisms in place to give effect to a high level of involvement
  (Gallagher, 2000:79-83).

Gallagher then constructs a cross typology based on both these control strategies and management structure/styles. This yields four types of OHSMS as follows:

# Types of OHSMS

| | |
|---|---|
| Innovative/safe person<br>***'Sophisticated behavioural'*** | Innovative/safe place<br>***'Adaptive hazard managers'*** |
| Traditional/safe person<br>***'Unsafe act minimisers'*** | Traditional/safe place<br>***'Traditional engineering and design'*** |

The strengths of this typology are two-fold. First, it is grounded in the literature that discusses alternative approaches to managing OHS and different control strategies, and it reflects the principal debates in that literature. Second, it can be operationalised through empirical tests to see which type of OHSMS performs best.

The typology also faces a difficulty in the fact that the 'safe place control strategy' is mandatory in Australia and should be found in all workplaces. There is not, therefore, a clear choice between two mutually exclusive control strategies; the workplace with dominant safe person characteristics should also be implementing safe place characteristics.

## 2.6 Degree of Implementation: Quality Levels

Frick and Wren (2000:38) expand upon their distinction between mandatory and voluntary OHSMS to further identify three levels of systems objectives, drawn from the literature on product quality control, that represent different levels of achievement and measures of OHSM performance. These are as follows:

- The first level is to meet the issued specifications. At this level, attention is likely to be focused upon narrow numerical outcome measures such as lost-time-injuries and sickness absenteeism. For voluntary systems, there may be limited measurement of the OHS management system itself.

- At the second level, the whole product has to function, meaning that it has to do 'things right'. For mandatory OHSM this requires employers to demonstrate compliance with standards. For various reasons, such standards may be loose, leaving scope for improvement which voluntary systems customised to organisational requirements can accomplish.

- The third level requires that the product also is the 'right thing' to meet the users' wishes and needs. Mandatory forms of OHSMS may raise local implementation to this level in the areas of injury and disease prevention. However, meeting stakeholder needs in OHSM is more akin to a political process of consultation between management and employees followed by action and review to ensure compliance with workers' needs. This is more likely to be a feature of the voluntary systems approach.

## 2.7 Degree of Implementation: Introductory and Advanced Systems

The idea that there may be different levels of OHSM has been interpreted another way in Australia where performance levels in some programs are explicitly developmental (the business graduating up an ascending ladder as it demonstrates compliance with the requirements of each successive level).

One example of an Australian program with developmental steps is the South Australian Safety Achiever Business System (SABS) (formerly known as the Safety Achiever Bonus Scheme). The Program specifies five standards (commitment and policy, planning, implementation, measurement and management systems review and implementation) linked in a continuous improvement cycle. Three 'levels' of implementation are then prescribed cumulatively introducing all five standards from a basic or introductory program to a proven continuous improvement system (WorkCover SA, 2000). Different evaluation standards are prescribed for each level.

## 2.8 OHSMS Diversity and Evaluation: A Summary

While, in general, this Report advocates care in defining OHSMS with respect to the problems outlined above, for the purpose of this project an inclusive approach to the phenomena is to be adopted. In particular, the term OHSMS will be used broadly to encompass both the highly complex formal systems adopted voluntarily by some businesses as well as the more rudimentary mandatory or advisory frameworks offered to and implemented by small business.

In this section, we have shown that OHSMS can vary upon a number of dimensions relating to method of implementation, system characteristics, and degree of implementation. Such variance is important because it affects evaluation and measurement of OHSMS performance. Measures appropriate for one dimension of a system will be irrelevant to another. Evaluation of OHSMS effectiveness may need to take account of what systems are expected to do. Are they to meet complex system or simple design standards? Are they implemented at the behest of management or external OHS authorities? Are objectives the simple ones such as reducing direct lost-time injuries or do they include satisfying multiple stakeholders? Are they at an early or established stage of development; and which of several different configurations of control strategy and management structure/style is adopted?

Drawing upon the review above, the diagram below sets out five key dimensions on which OHSMS vary that need to be considered in evaluation and measurement.

### OHSMS Diversity: 5 Key Dimensions for Evaluation

While all systems must meet the general requirements for an OHSMS (see Section 2.1 above), diversity may occur along five key dimensions.

1. Implementation method (voluntary, mandatory or hybrid)
2. Control strategy (safe person/safe place)
3. Management structure and style (innovative or traditional)
4. Degree of implementation (from meeting basic specifications to meeting stakeholder needs)
5. Degree of implementation (from introductory stage to fully operational).

# 3. OHSMS EFFECTIVENESS: CONDITIONS FOR SUCCESS AND BARRIERS TO PERFORMANCE

The first objective of this Report is to show how effective OHSMS are in delivering outcomes. The consultations unearthed a range of views upon this question. On the one hand, several experts asserted *'they don't work'* (Yossi Burger, AWU). More common was conditional agreement that they could work, but *'the jury is still out'* (Ian Furness and Peter Collins, WorkCover SA). Reasons for uncertainty that were high-lighted in the consultations included:

- Lack of evidence: *'We are not convinced of a link between OHSMS and outcomes'* (David Frith, Business SA).
- Lack of cost-benefit information: *'I suspect they make a difference, but wouldn't want to comment on cost effectiveness'* (Robert Pearce, Workplace Standards, Tasmania).
- Variance in the method of introduction to the workplace: *'It's not the system that counts, but how you do it'* (Andrea Shaw, Consultant).
- Variance in the type of system: *'OHSMS needs to be industry specific* (David Shaw, ACCI), and *No one system is appropriate for all business'* (Anne Bellamy, CCIWA).
- Length of time for systems to take effect: *'You may not see an effect for 5 or 6 years'* (Ian Gavin, Labor Council of NSW, and Terry Hannan, PSA of NSW).

Common to many of the consultations was confidence that anecdotal evidence or experience demonstrated that OHSMS can be effective, but that the likelihood of success depended greatly upon the type of system employed and the conditions under which it operates.

In this section we examine evidence and opinion upon OHSMS effectiveness taken from both the research literature and consultations. The section is divided into five parts. The first reports research findings upon the effectiveness of OHSMS and also upon other factors (which may be incorporated into OHSMS) which correlate with improved OHS performance. One finding in this review is discussed further in the second part. This concerns the importance of genuine senior management commitment to OHS including their motivation, performance evaluation and disciplinary matters. The third part looks at the integration of OHSMS with general management systems. The fourth part deals with the role of employee consultation. Fifth, we summarise research and consultation findings upon the factors contributing to effective OHSMS and the corresponding barriers where these conditions are not met.

## 3.1 Are OHSMS Effective? The Research Evidence

On the basis of current research, this question cannot be answered directly. Very little empirical research has been done to evaluate the effectiveness of OHSMS. Frick et al. (2000:2) note that the lack of critical assessment is surprising given *'OHSM has evolved internationally as the major strategy to reduce the serious social and economic problem of ill-health at work'.*

Nevertheless, there are some studies which shed light on OHSMS effectiveness, and which will be termed the 'effectiveness studies'. Before discussing these studies, several limitations of this research should be observed. First, most of these studies sought to isolate the distinguishing characteristics of firms with better health and safety performance and as such, they do not seek primarily to evaluate health and safety

management systems. Rather they provide a range of findings on the variables associated with successful health and safety outcomes. It follows that research has not directly tested the effectiveness of systems in general, or of particular types of system.

Second, most research has been conducted in the USA, Britain and Scandinavia. Given the likely significance of cultural variables (relating to management and employee behaviour), it is open to question whether findings for these countries would necessarily apply to Australian industry. Third, most studies are small scale and do not permit reliable generalisation. There have been few large scale surveys (other than to test the effects of Norwegian and Danish legislation) to allow tests that are statistically reliable for industry in general. We do not know the likelihood of systems succeeding, the variables that correlate with success, and the statistical significance of those relationships. Much remains to be done if OHSMS effectiveness is to be properly understood.

What can we learn from the 'effectiveness studies'? The first of them stem from a project commenced in the late 1970s, a three-stage study by researchers at the U.S. National Institute of Occupational Safety and Health (NIOSH) to define the distinguishing features of firms with better health and safety performance. In the first two phases, matched pair comparisons were undertaken of safety program practices in firms with low and high injury rates (Cohen et al., 1975; Smith et al., 1978). The third phase examined the health and safety programs of five companies with exemplary health and safety performance (Cohen & Cleveland, 1983). A number of possible discerning factors were identified in the NIOSH research, and in other studies linking health and safety management practices with injury outcome data (Simonds & Shafai-Sahrai, 1977; Viner et al., 1989; Gallagher, 1994; Zohar, 1980; Chew, 1988; Shannon et al., 1996; Simard & Marchand, 1995; Eyssen et al., 1980). Health and safety management practices identified as making a difference in a number of these studies are noted in Table 1. Recurring findings across the studies were the critical role played by senior managers in successful health and safety management systems, and the importance of effective communication, employee involvement and consultation.

Another set of studies also used injury and ill-health outcome data to assess the effectiveness of a proprietorial OHSMS, in this case the International Safety Rating 5-star System. In both studies (Eisner & Leger, 1988; Guastello, 1991) no correlation was found between the star rating and injury outcomes.

**Table 1: Key 'Effectiveness' Studies: Variables Associated with Better OHS Performance**

| Author | Variables associated with better OHS performance |
|---|---|
| Simonds and Shafai-Sahrai (1977) | senior management involvement, with reference to conduct of workplace audits/inspections, formal OHS reviews and safety issues on the agenda of company board meetings. Lower injury rate firms had fewer employees per supervisor; used accident cost analysis; had recreational programs for employees; better working environment; and particular workforce characteristics, namely higher average age of employees, higher percentage of married employees and longer average length of employment. |
| Smith et al. (1978) | high level of senior management activity, their involvement in workplace inspections and motivation of others, the inclusion of safety in plant meeting agendas, the status of specialist health and safety personnel. Low injury rate firms also had a more 'humanistic' approach in dealing with employees - more open, informal communication between management and employees; more frequent contact between supervisors and employees on safety and other work matters; and the use of counselling rather than dismissal to discipline violators of safety rules Also associated with lower injury rates were a better working environment; greater availability of recreational facilities outside of work hours; effort to involve families in safety campaigns; well defined job selection and advancement procedures; and particular workforce characteristics, including older, married employees with longer job service and lower absenteeism. |
| Cohen & Cleveland (1983) | high level of management involvement and commitment, including documented policies and responsibilities; an emphasis on upstream preventative activities; high level of employee involvement; a high level of integration of OHS into broader firm activity, including management accountability mechanisms; effective monitoring and review mechanisms. |
| Viner et al. (1989) | high management commitment to OHS with a focus on responsibilities and accountability; frank and open communication practices; employee consultation; health and safety knowledge and equipment; and prevention effort, with reference to hazard control hierarchy and planned identification, control and monitoring processes. |
| Gallagher (1994) | high level of senior management commitment, including commitment to effective consultative arrangements; effective consultative arrangements; integration of OHS into general workplace systems. |
| Shannon et al. (1996) | managers who demonstrate concern for workers' OHS and back it up with action; empowered employees; a problem-solving style for the OHS committee; documented management responsibilities; management performance appraisals; senior manager attendance at OHS meetings. |
| Gallagher (1997) | high level of senior management commitment; OHS responsibilities known; supervisor involvement encouraged; active involvement of health and safety representatives who have a broad role; effective OHS committees; planned hazard identification and risk assessment and hazard elimination control emphasis; comprehensive approach in inspections and investigations; purchasing systems. |

There has been some assessment, also, of the impact and effectiveness of the Scandinavian 'internal control' initiatives. Hovden and Tinmannsvik (1990:29) conclude a condition for successful implementation of internal control is a high degree of consensus on basic values between company managers and the government authorities, and between employers and employees and their organisations. A study by Saksvik and Nytro (1996) on early implementation of internal control in Norway found increased general awareness in 69 per cent of enterprises studied, despite a further finding that 66 per cent of enterprises had not prepared for the introduction of the new legislation. Notwithstanding these equivocal findings, the authors assess the early impact of the legislation as positive, even if most effort was directed at improving documentation of existing health and safety practices, and was concentrated upon enterprises with more developed health and safety management systems.

The follow-up study by Nytro et al. (1998) found 45 per cent of enterprises had implemented the internal control legislation four years after its introduction and 72 per cent had revised their assessments at least once since initial implementation. The study found the availability of internal enterprise health, safety and environment resources to be the strongest predictor of successful health and safety management systems. The authors continue to view the results of internal control implementation as positive, but they note also the shortage of time and resources accorded health and safety in the workplace and the frequent lack of commitment among top managers to championing a systematic approach to health and safety management.

Jensen's (1998) study of the implementation of equivalent initiatives in Denmark, similarly, judges the initiatives to have been a success, although implementation action was more likely in larger, public sector enterprises and was focussed more on repair than on fundamental prevention activity. A further study by Rasmussen and Jensen (1994) points to the gap between rational management systems and the inability of people to decide and behave in a rational way.

Two studies conducted in the nuclear industry have identified further conditions for success. Marcus' (1988:251) study of externally induced health and safety innovations in nuclear power companies following the Three Mile Island incident found autonomy to be a critical success factor, or the capacity of the enterprise to customise external requirements rather than adopt them in a rule-bound fashion. Nichols and Marcus (1990) highlight the possible negative impact of the diversion of management attention away from basic production and safety requirements. There is also empirical evidence pointing to factors that militate against the adoption of effective health and safety management systems. These include the difficulties faced by small firms, subcontracting arrangements, and contemporary labour market changes, which are discussed in Section 5.

The study by Gallagher (2000) of the relationship between OHSMS type and system performance is the only major empirical study of OHSMS effectiveness in Australian industry. Case study evidence was collected in the mid 1990s from twenty organisations that had implemented an OHSMS. The systems in these organisations were categorised according to Gallagher's cross typology based on control strategy and management structure/style (see Section 2.5 above). Performance was then assessed using three measures - incident/claims trends, changes in performance relative to industry benchmarks, and an assessment through an audit tool based upon SafetyMAP. Analysis of the findings suggests the type of OHSMS may influence OHSMS success or failure. There was a tendency for innovative/safe place enterprises (adaptive hazard managers) to perform better than traditional/safe person enterprises (unsafe act minimisers). Adaptive hazard managers stand out from the remainder by the strength of their focus on hazard elimination as the underlying purpose of their system activity. They had a planned approach to hazard management for the full spectrum of hazards, in contrast to other cases where systems activity variously had an underlying risk management or cultural change purpose, or appeared to be aimed at improving the OHSMS as an end in itself.

The roles of management and employees also distinguish the 'adaptive hazard manager' type. Gallagher's findings reinforce the results of the various 'effectiveness' studies which highlight the critical role of senior managers and of employee involvement and consultation. But they also suggest the importance of particular roles for the key players - that the most senior managers should drive health and safety change and that health and safety representatives should move away from the margins of health and safety management, into more mainstream health and safety management planning, implementation and review.

Hopkins' (2000) analysis of the Esso gas plant disaster provides a thorough case study of how deficient management commitment can cause an OHSMS to fail in practice. Esso had its own OHSMS - called OIMS (Operational Integrity Management System), once regarded by many as a model system and one which company audits suggested was operating at peak level. Using material from the Longford Royal Commission, Hopkins identifies a number of failures in the Esso system that contributed directly to the disaster, including defective auditing processes, the failure to adequately identify hazards and assess risks, a hands-off management strategy, an absence of procedures to deal with the immediate set of incidents, inadequate training, poor communication mechanisms and an inadequate hazard reporting system. Hopkins (2000:147) challenges the critics of OHSMS who argue the Esso disaster discredits the concept of an OHSMS and points instead to the need for 'organisational mindfulness', a concept said to account for the reliability of high reliability organisations. Mindfulness, he suggests, can strengthen an OHSMS by highlighting the aspects of health and safety management that are essential for high reliability.

Finally, there are studies in progress which aim to examine the implementation and effectiveness of OHSMS. One by Pearse (2000) is an intervention project among small fabricated metal product companies in South Western Sydney. The project is built firstly, around direct expert support and documented guidance and secondly, networking support arrangements among the participating companies. Preliminary audits have been undertaken and follow-up audits are planned. The preliminary results indicate this approach to facilitating the implementation of OHSMS has been effective in these small businesses.

A further study by Dell (2000) seeks to identify the conditions for successful OHSMS and the interventions needed to ensure OHSMS features are understood and applied in industry. Dell draws a distinction between reactive and proactive OHSMS, the former marked by reactive activity following an incident; the latter by proactive hazard management linked to quality and continuous improvement principles. Of the fifteen companies assessed to date, more than half have no basic system in place, no management focus on health and safety and high levels of legislative non-compliance. Of the remaining companies with some OHSMS in place, the systems are predominantly reactive in nature with no evidence of proactive systematic hazard or risk management activity. System performance remains difficult to isolate given these sub-optimal conditions.

Implicit in much of the research reviewed above is the finding that OHSMS sometimes work under the right conditions. It also points to the critical variables of senior management commitment and employee involvement. A general consensus also emerged in the consultations that the effectiveness of OHSMS depends on genuine senior management commitment and employee consultation which were commonly described as critical and inter-linked. Senior management commitment is viewed as a prerequisite for embarking on a systems approach in the first place. Without this commitment, an OHSMS cannot survive or is likely to degenerate into a token exercise. Employee consultation was also considered equally important.

> *Management commitment and consultative arrangements are twin pillars. Without both commitment and participation, health and safety management systems cannot work.* (Warwick Pearse, UWS).

While there is general consensus regarding the importance of management commitment and employee consultation to effective OHSMS, there is also some concern about their adequacy in Australian workplaces. In the following sections these issues are further examined. Firstly, we examine some special problems associated with senior management support for OHSMS. Secondly, the integration of OHSMS into broader management systems is examined. Thirdly, we turn to the importance of employee consultation for an effective OHSMS.

## 3.2 Senior Management Commitment: Motives and Methods

While the consultations reiterated the importance of senior management support, they suggested some difficulties in this area. One aspect of this relates to whether managers choose or are compelled to introduce an OHSMS. Geoff Dell (SIA) suggests there are two types of motivation for introducing OHSMS:

> *One works and one doesn't...the one that doesn't work is introducing a system for any other reason than to provide a safe workplace and there are bucket loads of those around...Ones that are genuinely trying to achieve, or use it as a tool for, creating a safe workplace will follow through to the limit of their resources...the test for the others is how far do we have to go to pass the audit.*

There is agreement, particularly among employer associations, that OHSMS are less likely to be effective where they are imposed from outside. Examples given of the imposition of OHSMS are supply-chain pressure on contractors to develop systems, government requirements on self-insurers to develop systems, and a new emphasis on documentation in some government inspection activity. The problems of weak management motivation and the easy but ineffective method of purchasing 'off-the-shelf' systems are explained further in Sections 4.2 and 4.3 below.

A second problem is that suspicion of management motives may arouse trade union opposition to OHSMS. As Peter Moylan (ACTU) commented, unions generally:

> *...fear OHSMS development in place of the current involvement of workers in health and safety and as a way of evading health and safety regulations, partly with the concurrence of the state. There is a danger that companies, particularly multinational companies, having introduced OHSMS, will push for access to 'deemed to comply' status.*

Yossi Berger (1999:54) comments that a focus on OHSMS may deflect attention away from real health and safety needs:

> *Giving feverish managerial attention to formal OHS 'instruments' (including expensive behaviour modification systems bought at top price) provides a 'shield of honour' with which to ward off criticism of the organisation's actual OHS performance. Unfortunately, too often managers are becoming expert at completing inventories, living with OHS systems and ticking boxes, without the appropriate health and safety improvements occurring.*

If senior management commitment is a precondition for successful OHSMS, what does this mean in practice? How is commitment demonstrated? How is it evaluated?

The consultations provided a range of responses to these questions.

- Terry Hannan (PSA) highlighted the need for senior managers to provide leadership and build sustainability into the system, giving an example from a public sector agency where the CEO '*…was a good driver - really ran commitment right through the*

*organisation...she's left but the commitment is still there...has permeated through the organisation; everyone has seen how it works. There's lots of training. Failure will ultimately mean contracting out'.* He also offered a hypothetical example of exacting accountability in practice, suggesting *'…if the CEO was sacked for not meeting OHS performance criteria - bells would ring everywhere, there would be panic in the ranks.'*

- The importance of senior managers leading by example was observed by Wayne Williams (Victorian WorkCover Authority) and Ian Furness and Peter Collins (WorkCover SA).

- In many consultations the provision of necessary resources was identified as an indicator of senior management commitment. Geoff Dell (SIA) remarked that the first question he asks when auditing is *'what budget do you have for your proactive safety management system?'.* On this issue David Frith (Business SA) took a qualified view that the amount of resources is not as important as the way in which resources are used.

- Senior management commitment could also be evaluated by the quality of communications. Thus Robert Pearce (Workplace Standards, Tasmania) noted the need for:

> ...*transparency, openness, transmitted all the way down through every level of management to the workforce. An open door policy, prepared to listen to every level of employee. Empowerment of the person who has responsibility for OHS - so that they can decide to implement the necessary changes.*

The research literature provides further insight into the substantive indicators of management commitment. The third phase of the NIOSH study (Cohen & Cleveland, 1983) examined five firms with exemplary health and safety performance. Each of the companies had distinctive health and safety programs underpinned by strong senior management support. They were found firstly, to accord real priority to health and safety in corporate policy and action; secondly, to include health and safety as an integral, not an isolated, part of the organisational decision-making process; and thirdly, to share general characteristics of successful health and safety programs, that is they set goals, assigned responsibilities, provided adequate resources, identified and dealt with hazards, motivated and involved employees, and evaluated health and safety performance.

Other research suggests management commitment should be linked to management accountability. As Dawson et al. (1988:172) comment, it

> *…is not based on a simple notion of intrinsic commitment to safety on the part of managers, but rather suggests organisational forms and activities which will secure the pursuit of safety in the context of competing demands on resources: it is not based simply on trust but arrangements for control.*

There is evidence to suggest that management accountability for OHS is often weak. Dawson et al. (1988:164) found that health and safety performance rarely featured in formal and informal management appraisals. Adequate practices to achieve appropriate management accountabilities for health and safety were lacking also in the twenty enterprises studied by Gallagher (1997). On a five point scale from high to low compliance with assessment criteria, no enterprise reached even an average rating on management accountability. While some enterprises included health and safety in their performance appraisal systems, there was no evidence to suggest health and safety was approached with the same rigour applied to appraisal of production or quality objectives. Generally, health and safety was raised in appraisals only in the event of a problem, and then rarely. In addition the focus of attention was more likely to be confined to narrow items such as

housekeeping or injury levels rather than performance-oriented health and safety objectives.

Gunningham (1999) has reviewed the literature on how senior managers can be motivated to give a higher priority to OHS and how supervisors/line managers can play an effective preventative role. Measuring, evaluating and taking action to reward good OHS performance and punish poor performance are identified by Gunningham (1999:31) as key drivers for line managers and supervisors. He notes that a possible approach yet to be pursued in any jurisdiction is the fostering of internal disciplinary procedures as part of an organisation's overall compliance/enforcement strategy. Such a requirement would be consistent with an OHSMS approach. Indeed, *'the identification of those managers responsible for OHS contraventions can be the first step in a process of identifying weaknesses in and redesigning the organisation's OHS management systems'* (Gunningham, 1999:35).

To summarise, while research and consultations agree that senior management commitment is essential for OHSMS effectiveness, there is some evidence to suggest that motives, methods and controls tend to be deficient.

## 3.3 Integrating OHSMS with General Management Systems

An effective OHSMS is often said to require integration into broader workplace management systems. The need for integrated systems has been widely supported by many authorities (Else, 1994; Quinlan & Bohle, 1991; Rahimi, 1995). Else (1994:21), for example, cites integration as a precondition *'…to make health and safety happen in the workplace'.* Our consultations generally endorsed this view. Various publications give practical advice on the opportunities for integration (WorkSafe, 1995; Health and Safety Executive, 1991).

At issue in this Report is the extent to which the integration objective is realised in practice and whether integration is at a sufficient level to meet the objective for health and safety to be given due priority in management decision-making and resource allocation.

There is no substantial Australian research evidence on this question. However, anecdotal evidence suggests that in practice the integration of OHSMS into broader systems is limited, or not of sufficient quality. Health and safety is said to remain a middle level management activity or specialist function that has little influence upon senior management decision-making or board level discussions.

There is more overseas research on the issue. The assessment of Rasmussen and Jensen (1994:46) regarding the Scandinavian experience in integrating OHSMS is largely negative. In their stereotypical situation they find:

> *The safety department establishes a formalised system with reference to the Du Pont system, ISO 9000, Eco-audit or another accepted, formalised system. In such systems the importance of the relations to other management systems are often stressed, but in practice these links are weak. Many decisions with relevance for working conditions are taken without involving the safety management system. Neither major nor minor changes in production processes are dealt with in the safety management system, even though they can have a major impact on working environment. The 'working environment management system' has been uncoupled or isolated from the decision making system in the organisation.*

Another study is Kamp and Le Blansch's (2000) report of several case studies analysing the integration of health and safety and environmental management systems in Denmark

and the Netherlands. The authors explored the implications for health and safety of linkages with the higher priority issue of the environment. Similarities relating to problem causation, implementation issues and prevention-based solutions underscore the potential for synergy. At the same time, there are significant differences between the two fields, and further differences with quality management, as summarised below:

| Field | Main actors | Traditional mode of operation |
|---|---|---|
| **Quality** | management; market actors | logic of managerial control |
| **Environment** | state authorities, management | logic of accountability and state control |
| **OHS** | industrial relations actors | logic of interest representation and bargaining |

Source: Kamp & Le Blansch, 1998:11

Noting the bureaucratic/Taylorist nature of standards-based management systems in these three areas, Kamp and Le Blansch examine changes in management preferences upon the form and strength of employee participation arising from any move towards greater integration of various management systems. They suggest:

> *Implementation of integrated management systems for OHS and environment creates a focus on the management as a leading actor, and define the fields as technical tasks, where knowledge of experts is essential. Consequently it could be anticipated that this development will strengthen the role of the management group and enhance centralisation of decision making based on technical-rational arguments, whereas negotiations based on a conception of conflicting interests are de-legitimised. On the other hand, direct participation may pose new possibilities for employee influence; the question is however what scope and possibilities for empowerment there are* (2000:420).

Kamp and Le Blansch (2000) use their case study evidence to draw several broad conclusions. Firstly, there is potential for synergy between health and safety and environment management, but bureaucratic management systems may not provide the appropriate frame for the learning process required. Secondly, an integrated approach can serve to strengthen the priority accorded to the two fields. However, it does not necessarily improve the relative status of health and safety, where it remains embedded as a middle level management function, whilst the environment is consolidated as an area of higher strategic importance commanding greater senior management attention. Thirdly, some aspects of 'integration' may be achieved at the expense of employee involvement.

The integration of OHSMS into broader management systems was regarded in the literature and in consultations as necessary for effective OHSMS. Research evidence on this issue is scanty and inconclusive, but suggests this to be a possible area of weakness.

## 3.4 The Importance of Employee Consultation in OHSMS

Employee consultation is the third critical requirement for OHSMS effectiveness. Employee consultation covers a wide spectrum of activities. At one end are methods to inform and educate employees to play a reliable and supportive role in a management-driven OHSMS. There may also be direct employee involvement programs, for example safety inspections and quality circles, which are also likely to be management-driven. Representational arrangements for health and safety are found further along the spectrum with health and safety representatives and committees having more direct influence over health and safety decision making. At the other end of the spectrum are strategies to achieve a high level of involvement of health and safety representatives and committee members in OHSMS planning, implementation and review.

Various views were expressed in the consultations, generally supporting a strong role for employee consultation in an effective OHSMS:

- David Shaw (ACCI) expressed support for employee involvement in the planning and implementation of OHSMS: *'...must have consultation for it to be effective - from planning all the way through...if you haven't developed it in association with your employees, you're not going to get it to operate...both sides have to commit'.*

- Sandra Cowell (AIG) added: *'unfortunately that (the full involvement of the employees in OHSMS) doesn't normally happen...It goes back to the relationships - if you know how to consult, it flows over to OHS'.*

- Anne Bellamy (CCIWA) noted that *'without consultation arrangements the system will not work. They are essential for getting the message across'.* She stressed the need for consultative arrangements to be appropriate for the culture of the workplace. In Western Australia she sees companies moving away from committees into groups and team leaders - these companies may view the new arrangements as a substitute for the legislated consultative arrangements involving health and safety representatives and health and safety committees.

Views were expressed in other consultations agreeing upon the importance of effective methods of employee consultation. According to Michael Quinlan (UNSW) employee consultation must be meaningful for effective communication, risk assessment and effective risk control. Bryan Bottomley rated consultative arrangements as the most important factor in OHSMS effectiveness and noted that there are many good examples available of the positive impact on health and safety management of consultative arrangements of one kind or another. David Caple, on the other hand, drew attention to some of the factors which can impede the effective involvement of employees in OHSMS activity, for example where employees have insufficient knowledge and expertise to contribute effectively to OHSMS planning activity, or where health and safety representatives are reluctant conscripts and health and safety committees have insufficient management support. On balance, most of the stakeholders who support OHSMS support a high level of employee involvement in the planning and operation of OHSMS.

A number of research studies also support employee involvement in programmed activity on health and safety management. Painter and Smith (1986) followed the development and operation of a participatory safety and hazard management program over a period of four years in six camps of a Canadian logging company. All aspects of the program revolved around employee involvement and the results included a 75 per cent decrease in accident frequency. While the authors acknowledge the difficulty in measuring the degree of impact of the program on the results observed, they maintain that the belief of company managers and employees that a cause-effect relationship exists is, in itself, an important feature of the program's acceptance and success. Pasmore and Friedlander (1982) reported on a U.S. study to increase employee involvement in problem-solving

activity on health and safety which, similarly, resulted in a reduction in injury levels over a nine-year period both before and after the action-research intervention. A study by Reilly et al. (1995) in the U.K. found that organisations with a health and safety committee, where employee representatives were chosen by unions, had a lower incidence of injury than enterprises with a management-driven approach to health and safety management. More generally, Walters (1998:324) cites research studies which stress the importance of trade union support for worker representation in health and safety.

Research also points to the importance of management commitment as a condition for effective employee consultation. Several studies have assessed OHS committee members' perceived attributes of successful committees, and these typically include the commitment and cooperation of management as a key ingredient of success (Kochan et al., 1997; Boden et al., 1984; Coyle & Leopold, 1981; Leopold & Beaumont, 1982). Indeed, Boden et al. (1984:834) hypothesise that the commitment of management, alongside the joint commitment of management and labour to solving health and safety problems, may be the critical factors for success, overshadowing the objective attributes of a committee. The suggestion that a supportive environment is a precondition for successful consultative arrangements is taken further in an evaluation by Dawson et al. (1988) of self-regulation policies in Britain. The impact of health and safety consultative arrangements on the level of risk was found by the authors to depend on the positive and active commitment of management, which in turn relies on management accountability.

In Gallagher's (2000) study, meaningful employee involvement was a key characteristic of the 'best practice' cases. The innovative/safe place cases, in particular, could be distinguished by the involvement of health and safety representatives and management representatives in a 'joint regulatory' relationship across systems activities. A 'joint regulatory' relationship featured a broad role for the health and safety representative in system planning, implementation and review, and a high level of commitment by senior managers to the position of the representative. A 'joint regulatory' approach can be contrasted to a 'consultative' approach where management commitment to the position of the representative similarly is high, but where the representative has a narrower, more traditional issue resolution role. It can also be contrasted to 'management-driven' and 'employee driven' approaches to employee involvement. Both are marked by a lower level of senior management commitment to consultative arrangements. In a 'management-driven' approach, health and safety representatives will have a narrow, issue resolution role or there will be no representative. In an 'employee-driven' approach, employees are expected to drive health and safety activity in the context of limited management support. Both are more likely to characterise poor performers.

A further characteristic of most of the 'best practice' cases in Gallagher (2000) was the involvement of the workforce as a whole in OHS, although not as a substitute for key players, such as senior managers and health and safety representatives. Methods to broaden and deepen the role of employees included innovative inspection programs, hazard research activity and OHS problem-solving teams.

Finally, a characteristic of most of the 'best practice' cases in Gallagher (2000) was a positive relationship between management and trade unions. Four of the five 'best practice' cases had strong, active unions on site compared with five of the fifteen 'non-best practice' cases. In each of these 'best practice' cases there was a high level of health and safety activity and a high level of management commitment to the role of the representative.

One obstacle to employee consultation identified in several of the consultations was the use of 'off-the-shelf' systems and audit tools currently in the marketplace. In expressing opposition to OHSMS, several union OHS experts drew attention to specific instances where OHSMS have been used by employers to undermine the involvement of unions and health and safety representatives in workplace OHS activity. For example, one union expert cited an example of a company with a government-accredited OHSMS that is now

reluctant to discuss OHS with health and safety representatives and unions because they have an 'approved system'. That employers might use an accredited OHSMS to undermine the established health and safety consultative arrangements may be an unexpected consequence of their wider use. More generally, it appears to be the case that some OHSMS tools now in use fail to incorporate or sufficiently emphasise employee consultation as an element of OHSMS performance.

## 3.5 Success Factors for OHSMS

Views expressed in the consultations were divided, some claiming that OHSMS do not work, and others that they can succeed in the right conditions. While evidence is scarce it supports the conditional view that OHSMS improve OHS outcomes in the right circumstances. Much of this research is not directly concerned with OHSMS - it merely implies that certain aspects of an OHSMS have positive effects. Also most of the research comes from other countries, leaving the possibility that cultural differences may make some findings difficult to transfer to Australian industry. In addition, the research mainly reports suggestive small scale projects. Of special importance in the Australian context is Gallagher's (2000) study which reports a recent (1994/5) study of OHSMS in twenty Australian firms. Gallagher's findings support the conclusion that a particular type of OHSMS ('adaptive hazard managers') distinguished by a 'safe place' control strategy and 'innovative management structure/style' performs better than other types (especially 'unsafe act minimisers' with a 'safe person/traditional management' approach).

Gallagher's research is also consistent with other studies and with the consultations which identify senior management commitment, integration into general systems, and employee consultation to be key variables determining the success of OHSMS. In this section we reviewed evidence from research and consultations to clarify what these key variables mean in practice. The Table below summarises our main findings upon first, the factors contributing to effective OHSMS and second, the barriers to their effectiveness.

| Factors contributing to effective OHSMS | Barriers to effective OHSMS |
|---|---|
| **Type of System** | |
| Customised to organisation's needs | Off-the-shelf system imposed without modification |
| Developed with support and involvement of all organisation stakeholders | Imposed by senior management without consultation |
| **Management Commitment** | |
| Strong senior management involvement | Delegation of OHS responsibility to line & OHS management positions |
| OHSMS introduced to improve OHS | Introduced & supported for non-OHS reasons |
| Provision of adequate resources | Inadequate resources |
| OHS integral to management performance appraisals | Limited accountability mechanisms |
| Leading by example | Words unsupported by practice |
| **Integration into Management Systems** | |
| All organisational functions incorporate OHS | OHSMS activities marginalized |
| **Role of Employee Involvement** | |
| All employees encouraged and able to participate | OHS restricted to 'technical' experts<br>Inadequate training of employees in OHS & in consultation |
| Independent representation of employees encouraged and supported | Selective employee involvement at management's discretion |

# 4. A BARRIER TO SUCCESS? THE APPROPRIATE ROLE FOR AUDIT TOOLS AND STANDARDS

The second objective of this Report is to identify what barriers exist to OHSMS success. Whilst audit tools can have positive benefits for OHSMS, they were extensively criticised in the consultations as potential barriers to system effectiveness. This section discusses this criticism.

However, positive attributes are claimed for audit tools. They are said to have done much to spread the adoption of OHSMS. For example, a number of state government authorities have developed audit tools to encourage OHSMS assessment, Standards Australia have developed OHSMS standards, and a number of proprietory systems such as NSCA 5-star system are widely promoted. Audit tools have also played a significant role in setting minimum standards through the accreditation of OHSMS for self-insurance purposes. Yet some aspects of audit can become a barrier to OHSMS operational effectiveness unless corrected.

The audit of OHSMS is also seen as having other benefits. It promotes documentation of processes. This facilitates consistency, communication of knowledge, and the learning from past mistakes through formal acknowledgment and control of hazards. It can also alert organisations of what to look for: *'it will give you an idea if there is anything else to look for below the paper…'* (Terry Hannan, PSA of NSW). Audit tools were also seen as playing a positive role in assisting organisations to *'understand and conceptualise OHSMS in blocks'* (Sandra Cowell, AIG).

The role of audit tools, however, is not limited to the audit process. They are increasingly seen by industry as 'model' systems. All experts consulted for this report stressed that audit tools are *not* systems – nevertheless the audit tools are providing the basis for the spread of relatively standardised OHSMS. This has come about for a number of reasons. First, organisations seeking accreditation for self-insurance are likely to adopt health and safety management systems based upon audit tools developed by statutory authorities in order to take a safer path to accreditation. Second, organisations requiring an OHSMS for commercial objectives – such as to meet tendering requirements – appear to find it convenient to adopt a pre-existing 'model'. This may also be the case for companies seeking accredited OHSMS for public relations objectives. Third, organisations hiring consultants to assist in the development of an OHSMS will be encouraged to adopt a proprietory system which can later meet auditing and accreditation requirements matching the audit tools for those systems. Finally, organisations interested in improving OHS but unfamiliar with the concept of an OHSMS are likely to turn to audit tools provided by statutory authorities for guidance, in the mistaken belief that the tools provide 'model' systems. Audit tools are therefore playing a major role in shaping the design of OHSMS.

There exists debate upon the proper role for audit tools. Broadly this debate arises from questions about the effect of audit tools on OHSMS effectiveness. Highlighting concerns about the adequacy of audit was the explosion at the Esso Longford Gas Plant - a workplace which had met stringent audit tests. This case is symptomatic of a more general fear that auditing processes do not reflect reality.

The consultations exposed six objections to OHSMS audit which are discussed in this section. First, audit tools appear to be associated with OHSMS processes becoming 'an end in themselves' rather than a means to improve OHS outcomes. Second, where audit tools are linked to external incentives, they may result in an unhealthy approach relative to one in which management is genuinely committed to OHSMS. Third, highly specific audit tools are being applied in a manner inconsistent with the contingent requirements of highly varied business organisations and workforces. Fourth, audit processes may not be sufficiently founded in sound auditor skills, standards and procedures. Fifth, audit tools

lead to a strong focus upon tangible hazards to the exclusion of latent, long term health risks. Sixth, audit tools are not designed to assess the elements identified as preconditions to effective OHSMS such as senior management commitment and employee involvement in planning, implementation and review of the OHSMS.

## 4.1 Audit Tools: An 'End in Themselves' or a Means to Improved OHS Outcomes?

Significant components of the audit process can be verified through assessing record-keeping and documentation. There is agreement that this can result in an over-emphasis on ensuring the paperwork and documentation are in place, and an under-emphasis upon ensuring the OHSMS reflects workplace practices as well as maintaining its objective of improving OHS. Ultimately resources may be misdirected away from the objective of reducing workplace hazards towards meeting the audit objectives. Examples were given of companies spending several months preparing the paper work to pass the next audit.

> *They scramble around, get all the paper work organised, they don't work to it, they just get all the paper work together…but what's the good of it, if it doesn't translate to what's happening?* (Ian Gavin, Labor Council of NSW).

Hopkins (2000:84) cites the Longford Royal Commission to illustrate the way in which audit processes can endorse a system which has become removed from the reality of the workplace:

> *The Commission gained the distinct impression that there was a tendency for the administration of OIMS [the Esso OHSMS] to take on a life of its own, divorced from operations in the field. Indeed it seemed that in some respects, concentration upon the development and maintenance of the system diverted attention from what was actually happening in the practical functioning of the plants at Longford* (Dawson, 1999:13.39-40 cited in Hopkins, 2000:84).

Even when organisations adopt an OHSMS based upon audit tools without the intention of proceeding to audit processes, concern exists that the tools promote a token system. Yossi Berger (AWU) described OHSMS as a *'degenerate OHS activity',* providing examples of workers being prevented from taking appropriate OHS actions until they consulted 'the system'. From his perspective, OHSMS encourage personnel *'not to think'* – instead all decisions and actions are based on highly regimented written systems.

These observations are consistent with international research findings. Nichols and Marcus (1990), like Hopkins (2000), have identified possible negative impacts from diverting management attention away from basic production and safety requirements. In 1995, Norwegian regulations were revised in order to avoid an unnecessarily paper-heavy system by placing less emphasis on documentation and more on health and safety action (Nytro et al., 1998).

## 4.2 Instrumental Motivation and 'Off-The-Shelf' Systems

The consultations revealed almost universal support for the belief that unless OHSMS are introduced with the prime objective of improving OHS, they are unlikely to be effective because the preconditions for success will not be met. When the reason for introducing an OHSMS is primarily commercial (such as winning a contract) and OHSMS outcomes themselves are unimportant, the business's motive can be termed instrumental.

Audit tools are seen to facilitate an instrumentalist approach to OHSMS. In particular, they enable an organisation to buy an 'off-the-shelf' system without committing to

implementation of the system. *'They purchase a system and they think they've implemented it'* (George McHugh, DETIR, Qld). This was remarked upon most often in relation to contractors requiring an OHSMS for tendering purposes. In some cases, the purchase of an off-the-shelf system may act as a *'smokescreen for doing nothing'* (Cathy Butcher, VTHC). The 'system' can also then be a mechanism for undermining more traditional employee involvement in OHS decisions.

Does this lead to an unhealthy approach? Does having an ineffective system in place for instrumental reasons lead to poorer OHS outcomes than not having a system at all? Views varied. Where an OHSMS was purchased 'off-the-shelf' without adequate implementation, some thought it may still have an 'awareness raising' benefit by forcing the organisation to think about OHSMS. A partially implemented 'off-the-shelf' system was seen by others as an improvement to an ad hoc approach to OHS. But where the system was purchased as a means of undermining employee rights, then the outcomes were seen as damaging to OHS. This was most clearly illustrated in an example provided by Cathy Butcher (VTHC) where the employer achieved initial level accreditation under SafetyMap (satisfying 58 of 139 SafetyMap audit criteria) and then refused to consult further with unions on OHS, justifying the decision by the company's success in reaching initial level accreditation.

## 4.3 Do Audit Tools Meet Contingent Business and Workforce Requirements?

The consultations raised a number of problems in relation to the design of audit tools. In particular, the application of highly specific audit tools to varied business organisations and workforces was criticised. This problem arises in two contexts. The first is when organisations use audit tools to guide them in developing OHSMS, and the second is when they undergo an OHSMS audit.

Organisations developing a system based on an audit tool confront two problems. On the one hand, the tools are regarded as too generic and provide insufficient guidance on the application of general principals at an organisational level. On the other hand, they are highly detailed. In the case of NSCA 5-star, sixty key elements are contained in five categories (Dell, 2000). This appears to influence employers who mistakenly believe they have to apply every component of the tool in order to have a system. In part, these problems arise from the misconception that audit tools are models. The audit tools then drive the management of an OHSMS. Anne Bellamy (CCIWA) emphasises how this approach: *'…contradicts the need for an innovative, flexible approach that meets the demands of the workplace and which has reasonable outcomes*'. Instead, *'you manage to the tool'.* David Frith (Business SA) commented similarly: *'you should develop the system, and then find the audit tools appropriate to that system'.* There is common agreement that organisations are attempting to apply systems which are inappropriate to their organisation's needs – and that this misunderstanding is driven by the nature of audit tools. Similar problems arise for organisations facing an audit, where resources may be directed to meeting each component of a system, irrespective of its relevance to their organisation.

The capacity of an organisation to adapt or customise innovations to their own requirements, rather than adopt them in a rule-bound fashion has been identified by Marcus (1988) as a critical success factor in effective OHS innovations. OHS experts consulted in this study, who facilitated the development of OHSMS for organisations, actively tailored OHSMS to the specific needs of the organisation in their own professional work. From their perspective, anything less fails to meet the preventative objectives on an OHSMS. Highly specific audit tools are problematic: *'the more you try to define the procedures, the more they slip through your fingers'* (Andrea Shaw, Consultant).

Consultants promoting standardised OHSMS with insufficient attention to tailoring to organisation needs are thought to simply confuse employers:

> *great manuals, stacks of them looking great on the shelves, but it doesn't mean anything, it's not reflected in the operations that are occurring on a day-to-day basis…they don't understand the connections, don't understand how it all works as a total approach…* (Sandra Cowell, AIG).

## 4.4 Auditor Skills, Standards and Procedures

The auditing of OHSMS for accreditation purposes was also criticised in consultations. There exists a real concern that the process is being 'hijacked' by auditor techniques and standards inappropriate to occupational health and safety. When applied inappropriately, the process can contribute to the perpetuation of 'paper systems' and fail to distinguish between systems which contribute to improved OHS and those which do not. This is particularly problematic when it results in a false impression of 'doing something', thus providing a unfounded sense of security for organisations.

Concerns were expressed that Quality Audit techniques were being applied in an inappropriate manner. They are said to be:

> *Captured by quality audit people…who are just going through a ticking the box approach which makes the whole exercise useless…* (Tim Burrows, VECCI).

Associated with this is the concern that the level of auditor OHS expertise is inadequate, and may be further downgraded if current approaches to auditing continue. There is a general belief that OHSMS audits require much more OHS specific knowledge than that which applies in quality audits.

> *A rigorous audit needs to examine the hazard identification strategy and make some effort to seek out hazards which may have been missed, so as to be able to make a judgment about how effectively hazard identification and control is being carried out* (Hopkins, 2000:86).

Concern was also expressed that the consequences of substandard auditing for OHS at the workplace may not be fully appreciated by those involved in the audit process. *'It needs to be more than just ticking boxes'* (David Caple, ESA).

The auditing process applied to OHSMS may also be less independent than that required for financial auditing. Peter Moylan (ACTU) suggested that *'auditing is problematic because of conflict of interest…some consultants give easy scores to please'.* Liz Bluff (Uni. of SA) considered being 'an outsider' was not sufficient – the question is *'who hires the auditor?'*. This problem is not dissimilar from more traditional OHS concerns relating to conflict of interests confronting other OHS professionals, such as physicians, hired by employers to evaluate OHS problems. *'They have recognised an obligation to advance the economic interests of their employers as well as protect the individual and collective interests of the workers who are their patients'* (Bohle & Quinlan, 2000:72).

Another issue of concern is whether the audit process focuses upon the right objectives. The components of an audit need to be designed according to the objectives of the audit (David Frith, Business SA). Should an OHSMS audit focus on whether the system is meeting its objective to prevent OHS problems? Or should it focus upon whether the details of the system are being complied with? According to Geoff Dell (SIA), a common failing in auditing is that it *'measures how much of a system you have implemented, not is it a valid process delivering an outcome?'*.

Likewise, Bryan Bottomley (Consultant) suggested *'audits are too focused on assessing the level of conformity, not effectiveness'*.

Anne Bellamy (CCIWA) suggested the audit tools need to change with the progressive development of the organisation's OHSMS. In her experience, companies find the audit process useful in the establishing stages, but are subject to diminishing returns once the system is fully established. *'The only way for audits to be of benefit is if the tool is upgraded every 2 – 3 years'.*

## 4.5 Audit Tool Focus: Tangible Hazards or Latent and Long-Term Health Risks?

A number of industry experts raised concerns about the potential for OHSMS to focus upon tangible hazards to the exclusion of more subtle long term health risks. The problem of identifying less tangible hazards is not unique to OHSMS audit tools, however, the concern is that once an organisation has completed an audit, they may mistakenly believe they have achieved a comprehensive and effective approach to managing OHS.

David Caple (ESA) described many systems as *'skating around the perimeter'.* The tendency for systems to focus upon reportable injuries results in a failure to acknowledge and address non-reported problems such as high levels of stress, fatigue, threats of workplace violence, and threats of disease such as HIV-Aids. Similarly, Michael Quinlan expressed concern about the inability of audit tools to detect OHS problems related to *'the disorganisation'* associated with the growing presence of casuals and labour hire workers in the workplace.

These concerns are consistent with critiques of behaviourally based OHSMS, and reviews of the varying objectives of OHSMS. Frick and Wren note that proprietorial systems rarely mention organisational factors influencing OHS, and that some systems seem to *'aim mainly for accident prevention rather than health'* (Frick & Wren, 2000:26). This bias is likely to be compounded in systems which emphasise an objective of reducing lost-time injuries. Such systems run the risk of focussing more on the management of claims, and overlooking disease and health problems for which claims may not be made – at least in the short term. Likewise, a study by Wokutch and VanSandt (2000) of DuPont in the United States found that DuPont's overall record on safety performance was much stronger than its record on occupational health. Their behaviourally based OHSMS, with rewards and punishments to encourage desired behaviours, was seen as both more difficult and less effective in relation to disease.

A similar problem is that OHSMS tend to focus upon easily identified hazards such as 'trips and falls' rather than the identification of potential major hazards (Hopkins, 2000; Walker, 1998). This question is discussed at length in Hopkin's analysis of the Longford explosion (Hopkins, 2000).

## 4.6 Audit Tools and the Conditions for OHSMS Effectiveness

Sections 3.2 and 3.4 showed that effective systems require strong senior management commitment and meaningful employee involvement. In consultations, much anecdotal evidence was provided of organisations introducing OHSMS without these preconditions in place. These OHSMS were considered ineffective. This raises the question of whether audit tools give sufficient weight to these requirements?

An international research study of OHSMS undertaken by the ILO (Dalrymple & Redinger, 1998) found a large number of documents or audit tools in use around the world and chose twenty four for content analysis. The majority were found to be strong in traditional areas of health and safety management such as risk assessment, hazard control, training and evaluation. However they were weaker in areas such as

management commitment and employee consultation. Two Australian audit/guidance tools were included in the ILO study, SafetyMAP and AS/NZ4804. While both of these pay attention to management commitment and employee consultation, they tend to do so in an inadequate way.

This is claimed despite the fact that they have extensive consultation requirements. Thus AS4801 requires employees to be consulted on policy and procedure development, implementation, and review; on changes that affect workplace OHS; to choose their own representatives; and that consultation procedures be documented and agreed to by employees. However, critical comment on the adequacy of these provisions is provided by Ian Furness (WorkCover, SA), who compares the AS4801 (Standards Australia, 2000) provisions with those of the Safety Achiever Business System (WorkCover SA, 2000):

> *The SABS Performance Standards emphasises that consultation with employees or their representatives is permeated throughout the whole system, reinforced through multiple mentioning. The Australian Standard seems to see employee consultation taking place at the lower, procedural level. The SABS Performance Standards use the term 'Management Systems Review' rather than 'Management Review'. Under SABS the organisation reviews the management system in consultation with employees. The Australian Standard seems to see 'Management Review' as 'Review by Management' rather than 'Review of (OHS) Management'. Here, management does the reviewing and consultation is not specifically mentioned. I believe this is a residue of the quality approach. Employees in my opinion have a right to input at the strategic level, even if it is management's responsibility to provide a safe workplace.*

Another problem is that audit tools do not prioritise employee involvement or senior management commitment as preconditions for an effective system. Instead, these appear as separate items amongst many equally weighted components of a system. Given the complex demands of such systems, they can become marginalised when managers choose what to do first.

A further difficulty is that management commitment and employee consultation are complex issues to assess. For example, *'sources of information need to be representative across the organisation'* (Liz Bluff, Uni. of SA). But the audit process is generally too brief to develop relevant information of sufficient quality. This difficulty is compounded by weak auditor skills. Poor understanding of the nature of consultation, and insufficient guidance on measures of management commitment often create a tendency to *'focus on the easy stuff' – the 'ticking of the boxes'*.

Not all these problems are inevitable. Warwick Pearse (UWS) suggested they may flow from *'poor auditing…the good audits uncover this kind of problem'*. Ian Gavin (Labor Council of NSW) drew attention to overseas examples of more thorough audit tools. Thus the DNV model (used on North Sea oil rigs) requires that 50% of workers be interviewed for first level accreditation, and 80% for top level accreditation. From Ian Gavin's perspective, *'they are more advanced than we could ever be'*. The Queensland Government has also utilised audit tools incorporating questionnaires for employees, line management and senior management in order to *'focus more on questions about what is going on, rather than documentation'* (George McHugh & Steven Campbell, DETIR, Qld).

## 4.7 Summary

Audit tools have played a major role in the expansion of OHSMS in Australian industry, but they also can provide barriers to the operational effectiveness of OHSMS. These are summarised below.

### The role of audit tools in OHSMS operational effectiveness

**Benefits associated with audit tools and the audit process:**

- Promotes documentation, facilitating consistency, communication and learning from past mistakes.
- Can alert organisations to hidden OHS problems.
- Can assist organisations to understand the concept of an OHSMS.

**Barriers to the operational effectiveness of OHSMS associated with audit tools:**

- Audit tools encourage a 'paper system' which may not be implemented, nor reflect organisational OHS practices and concerns.
- Audit tools can facilitate an instrumentalist approach to OHSMS.
- Audit tools encourage a view that a 'model' OHSMS can be applied to a diverse range of workplaces and discourage customisation to organisational needs.
- Flaws in the audit process & auditor skills result in ineffective audits, including 'just ticking boxes' rather than meaningful assessment, and an insufficient understanding of OHS to assess the effectiveness of OHSMS.
- Audit tools give insufficient weight to the critical role of senior management commitment, employee involvement and systems integration in OHSMS.
- Audit tools focus upon tangible hazards to the exclusion of more subtle long term health risks.

# 5. BARRIERS TO SUCCESS: SPECIAL IMPLEMENTATION DIFFICULTIES

Questions have been raised about whether broader changes in organisational structures and employment patterns may create barriers to the implementation and effectiveness of OHSMS (Bottomley, 1999). OHSMS are said to assume a stable workforce and a stable workplace (Michael Quinlan, UNSW). Yet the growing importance of small businesses, the shift towards part-time and casual employment, the growth of contracting arrangements, and the increased use of labour hire employment represent a shift away from stable organisational and employment relations. In this section, we discuss each of these changes in relation to the difficulties created for the implementation and effectiveness of OHSMS.

## 5.1 Small Business

The literature on small business and OHS has identified a number of factors influencing the level of small business understanding and compliance with OHS requirements. A recent study of small businesses in New South Wales and Queensland by Lamm (1999: Chapters 5 & 6), for example, lists the following influential factors:

- difficulty accessing resources (such as lack of resources, inability to spread costs & wider market environment);
- limited training or industry experience;
- pressure from large businesses to reduce costs;
- influence of large businesses requiring safe work systems from suppliers;
- influence of quality management systems (such as qualified integration of OHS with quality management systems); and
- their relationship with OHS regulatory agencies (often perceived as distant and lacking an understanding of small business).

Lamm's findings endorse those of Mayhew who noted that, in a context of determined independence and sense of individual responsibility, *'OHS is perceived to be just one of many government intrusions into personal affairs'* (Mayhew, 1997:4). The significance of economic pressures overriding health and safety concerns has also been highlighted in several Australian studies of small business (for a summary of several see Quinlan & Mayhew, 2000; Underhill et al., 1997).

A number of overseas studies have identified a limited capacity for small firms to adapt to self-regulation in OHS and to develop OHSMS. Dawson et al. (1988) found the capacity for self-regulation to be limited where the firm was small. In the Danish and Norwegian internal control implementation studies, the vast majority of small employers had not initiated implementation action (Jensen, 1998; Saksvik & Nytro, 1996), reflecting the myriad constraints impeding effective health and safety management in the small business sector, including lack of knowledge and expertise, and a mindset not conducive to a systematic approach to health and safety management (Eakin, 1992; Eakin et al., 2000; Saksvik & Nytro, 1996).

Similar factors were also identified in consultations as critical to the likelihood of small business adopting OHSMS:

- Small business typically do not operate within a framework of management systems, and are *'confused as to what a system is'* (Sandra Cowell, AIG). OHSMS models, however, *'make an assumption that a definite management structure is in place…they assume a system is needed whereas in small business informal methods can work'* (Anne Bellamy, CCIWA).

- Commercially available systems are regarded as *'too big, too onerous implementation task for most small-medium businesses'* (Geoff Dell, SIA).

- Insufficient resources were seen as a major impediment, particularly when everything falls on the shoulders of the owner, and *'they are driven by other pressures'* (Robert Pearce, Workplace Standards, Tasmania).

Limited exceptions to these observations were raised in consultations. Larger organisations – to whom small business supply – can have a positive influence on small businesses adopting a more systematic approach to OHS. This is explained further in relation to contractors in Section 5.3. Mayhew's (2000) study of a fast-food chain suggests that an OHSMS can be effective in small workplaces when the system fully integrates OHS into all aspects of work design and training. But the study focused on an OHSMS developed by a major multi-national and then strictly applied to their own and franchisee workplaces. Resource constraints here may not have typified small business. Case study research by Shaw and Blewitt has also identified small businesses with effective OHSMS (Andrea Shaw, Consultant). These cases did not involve the implementation of systems based on audit tools, but were much more *'organic'* in nature. In one case, a strong management commitment to OHS, coupled with employee involvement from the commencement of the system's development, resulted in a highly detailed and documented system which facilitated sound OHS practices on an every day basis (Andrea Shaw, Consultant).

Wright's (1998) study of small-medium size businesses in the UK noted the importance of presenting low cost, affordable solutions to encourage small business to comply with OHS requirements. In Australia, a number of innovative approaches to OHSMS development in small business are being piloted in response to the perception that OHSMS are too complicated and inappropriate for small businesses. Amongst these are the NSW WorkCover 'D-I-Y Kit' pilot project with small-medium companies. The kit is intended *'to enable workplaces to develop their own risk management strategies…as a practical way for them to meet their OHS responsibilities'* (Costello & Merrett, 2000:2). Businesses are encouraged to adopt a systematic approach to OHS, akin to a simplified system focussing primarily upon hazard management activities. The Victorian WorkCover Authority has a program to encourage small business to establish OHSMS with the assistance of their employer associations, and plans to evaluate the program in the near future. ACCI has produced a booklet on managing OHS for small business in conjunction with its state affiliates (ACCI, 1999). This presents safety management as a 4-step process rather than a fully fledged OHSMS. Finally, the intervention project led by Warwick Pearse (UWS) (see Section 3.1) builds upon the tendency for small business to acquire information on OHS from personal contacts and networks rather than OHS agencies (Caple, 1996; Mitchell & Mandryk, 1998). Pearse facilitates the customisation of OHSMS for the small businesses through personal intervention, and encourages networking amongst small businesses to assist their understanding and appreciation of OHSMS. This has been extremely well received by project participants (First National Conference on OHSMS, Sydney, July, 2000), and illustrates how, with appropriate interventions and support, small business may accommodate the concept of OHSMS.

Each of these approaches is intended to demystify the concept of managing OHS so that small businesses will focus upon a more strategic approach without being overwhelmed by an OHSMS. They are consistent with the notion of *'sizing OHS to the business'* (George Gay, HIA), but at present they are also dependent upon effective interveners to facilitate the process. Doubts were raised in consultations as to whether these small business experiments will continue to flourish once the intervention and leadership of third parties is complete, in the same way that other business programs tend to fall aside once the 'leader' of the project moves on.

These approaches also raise the question of whether a 'systematic' but scaled back model of OHSMS is more appropriate for small business. If small business on the whole are not

amenable to OHSMS, is an abridged version of an OHSMS sufficient? Would it result in a less effective approach to OHS for small business than an OHSMS? There is insufficient empirical evidence on managing OHS in small business to know the answers. Geoff Dell (SIA) suggested in relation to applying abridged systems that *'the problem is that we don't know which parts of the systems really work'.*

## 5.2 Part-time and Casual Employees

Part-time and casual employees are a significant, and growing, proportion of the Australian workforce (Burgess & Campbell, 1998). Quinlan and Mayhew suggest:

> *the growth of precarious employment is liable to undermine the effectiveness of existing regulatory apparatuses, make it more difficult to manage OHS in their workplaces, and inhibit employee and union involvement in OHS. This may erode the basis for developing more systematic approaches to OHS management, including the most elaborate expression of this in OHSMS* (Quinlan & Mayhew, 2000).

Overseas research has found *'The more casualised jobs are, the less of a priority prevention is'* (Vogel, 1999:42). Non-permanent workers have less knowledge about safety issues, are more constrained from refusing work environment deficiencies, and find it more difficult to be heard in relation to poor work environment issues (Aronsson, 1999). Fixed-term and short-term employees have also been identified as having significantly higher levels of workplace injuries than permanent employees (Francois, 1995; see also Isaksson et al., 2000). Australian research on part-time and casual employees and OHS is more limited, with only one major study of young casual workers in the fast-food industry (Mayhew, 2000). These workers were found to have a relatively high knowledge of OHS, but the findings of this research have been viewed as peculiar to the firm and above average for the industry (Quinlan & Mayhew, 2000:194).
How do organisations reliant on part-time and casual employees adapt their OHSMS to accommodate these employees? Consultations suggested that on the whole, part-time and casual employees are excluded from the operation of OHSMS. Their weak involvement in OHSMS was paralleled to that on other employment issues. They have less involvement in consultative processes, an absence of on-going training, and less detailed knowledge and experience of the workplace (Dianna Alder, WorkCover SA; ACIRRT, 1999:141). In some areas of employment, there has been *'such an influx that they just miss out on being part of the system'* (Sandra Cowell, AIG). Experts consulted agreed that companies generally did not take additional steps to incorporate casuals and part-time employees into their OHSMS, and that these employees were informed about OHSMS issues only through compulsory induction training.

A distinction was often drawn in consultations between part-time and casual employees, with casuals perceived as the most excluded group:

- *Part-timers – they can become part of the workplace culture…casuals less so, they're the most disadvantaged* (Anne Bellamy, CCIWA).

- *Casual's don't get the training…it's a fact of life* (Terry Hannan, PSA of NSW).

The Australian Workplace Industrial Relations Survey of 1995 confirms these views. Casual employees were less likely to receive job-related training than non-casuals, and only 24% of casual employees had received OHS training compared to 36% of non-casuals (ACIRRT, 1999:141). The exclusion of casuals is seen as inherent to current OHSMS tools - *'OHSMS assume a stable workforce'* (Michael Quinlan, UNSW). That casual workers, as well as some part-time employees are excluded from OHSMS – from the process of identifying hazards and participating in OHS committees - was seen as an issue of real concern in consultations. *'They are alienated from that process…that's a real challenge*

*for the future, how do these OHSMS empower these workers to be part of the process?'* (David Caple, ESA; see also Legge et al., 1996). The coincidence of an expansion in the workforce of workers more vulnerable to OHS problems, accompanied by an expansion of OHS processes which exclude those workers is an issue for concern.

Mechanisms for operationalising OHSMS in relation to part-time and casual employees were raised in a number of consultations. Liz Bluff (Uni. of S.A.) suggested a greater need for hazard reduction and OHS training to be built into jobs *'for more direct control at the source'* – a characteristic of the tasks performed in the Mayhew (2000) study noted above. A number of experts posed the question of whether a 'ticket or passport system' for casual workers, dependent upon having received prior OHS training, might be an option. But practical impediments, and ultimately the relevance of general rather than job specific OHS training, resulted in dampened enthusiasm for such an approach. David Caple (ESA) provided an example of a more innovative approach in a call centre where casuals were encouraged to participate in team 'chat-rooms' to discuss a range of issues including OHS. This approach presents a first step in overcoming some of the practical difficulties of odd attendance hours preventing casual employees from participating in committee processes – or at least relieves some of the more alienating aspects of their employment. Each of these suggestions may go some way to reducing OHS problems for casual and part-time employees, but do they amount to their incorporation into existing models of OHSMS in such a way as to place them on an equal footing with permanent employees? Also the additional cost outlay required to incorporate part-time and casual employees in an OHSMS appears to negate the cost advantages underpinning their employment.

## 5.3 Contractors

Most OHSMS tools refer to contractors in varying degrees, however consultations raised a number of significant problems in relation to OHSMS and contractors. Concerns were expressed about the way in which principal contractors incorporated subcontractors into their OHSMS; whether contractors had effective OHSMS; and the propensity for OHSMS to create confusion between principals and contractors. These concerns are interrelated.

How do principal contractors incorporate contractors into their OHSMS? The common view was that principal contractors do not incorporate subcontractors into their OHSMS – the OHSMS was instead seen as the responsibility of the subcontractor. In the building industry, for example, principal contractors are often required to have an OHSMS as a precondition for
tendering on major projects. This, in turn, results in principal contractors requiring subcontractors to provide evidence of an OHSMS in order to tender for the subcontracted work. Whilst external incentives have been associated with greater OHS compliance in some research studies (for example, see Wright, 1998), the likelihood of paper systems arising under this process was raised in a number of consultations (see also Section 4.2 and Bottomley, 1999). Yossi Berger (AWU) described this phenomenon as the *'coinage of fraudulence'*.

In some instances, principal contractors impose their OHSMS upon the subcontractor without taking steps to explain the OHSMS. This practice is *'generally met with cynicism...lacking the essential preconditions for a system to be effective'* (Andrea Shaw, Consultant).

> *They don't understand the system, no one gives them significant training in it, and it's not a simple thing for them to come to terms with…they want to keep the site safe, they've done it for years, and they believe they know how to do it without coming to terms with a document listing 18 requirements*
> (Ian Gavin, Labor Council of NSW).

The critical role of the principal contractor in providing assistance to subcontractors, akin to a partnership arrangement, has been noted elsewhere as a key factor in successful contractor compliance with OHS requirements (NOHSC, 1999b). Consultations endorsed this:

> *Those doing it well believe in it, and are progressing it through their sub-trades as well – not just ticking boxes* (George Gay, HIA).

Likewise, the requirement for subcontractors to have an OHSMS was seen as slowly transforming the attitudes of subcontractors towards OHS:

- *There's an increasing realisation they have to conform with the safety culture of the site they are going on to* (David Shaw, ACCI).
- *It has increased awareness* (Warwick Pearse, UWS).
- *It gives them permission to talk about it* (Andrea Shaw, Consultant).
- *It's the prime driver of a shifting approach to OHS by subcontractors* (Robert Pearce, Workplace Standards, Tasmania)

Mayhew and Ferris's research into the effect of mandatory health and safety plans for Queensland builders supports these views. They found it '*improved knowledge of OHS legislation, led to more frequent inclusion of OHS clauses in contracts, and resulted in more effective hazard control measures*' (Mayhew & Ferris, 1998:357-62).

It would be incorrect, however, to suggest that this approach is not without difficulties. Yossi Berger (AWU) noted that whilst contractors may be more conscious of OHS, their behaviour has not yet changed. In his experience, a formal OHSMS can contribute to a '*passing of the buck'* between the principal and subcontractor OHSMS. Bryan Bottomley (Consultant) commented that *'principal contractors have the view that one size fits all…lack of ownership problems arise'.* Another problem relates to the often brief relationship between the principal contractor and the subcontractor: *'by the time things are in place, they've moved to another job'* (Anne Bellamy, CCIWA). *'The interface is neither efficient or effective'* (Ian Gavin, Labor Council of NSW).

While some contractors develop their own OHSMS, problems may arise when the contractor's OHSMS is inconsistent with that of the principal. David Caple (ESA) described a likely outcome of this as:

> *the contractor may have a system, but the crunch comes with the local manager who is supervising the contract staff…who may not follow those procedures, or the procedures may not be relevant to the local site.*

Overcoming this possibility through common OHSMS between principal and subcontractors was raised in a number of consultations. This is actively encouraged in the construction industry in Tasmania as a means of overcoming some of the problems identified above (Robert Pearce, Workplace Standards Tasmania). A number of industry experts also cited examples of organisations in manufacturing and mining where such an approach was believed to be improving OHS. Commonality may be effective where principals and contractors have a fairly stable relationship. However, it becomes less meaningful when the contract is short-term (Peter Moylan, ACTU).

The constraints facing subcontractors with respect to OHS, reflected in the application of OHSMS in subcontractor organisations, are recognised in the literature and were endorsed in consultations. Mayhew, Quinlan and Bennett's (1996) study of subcontracting in four Australian industries identified pressures associated with payment by results, workplace disorganisation, ineffective regulation, and a lack of resources as contributing to poorer

OHS outcomes in subcontractor organisations. The pressure for subcontractors to undercut competitors has prompted the Queensland government to consider more stringent audit requirements on OHSMS in the construction industry (George McHugh & Steven Campbell, DETIR, Qld.) in order to mitigate some of these problems. Most subcontractors are smaller organisations, encountering the problems noted in Section 5.1 above.

> *They focus on where tomorrow's job is coming from – not safety today* (Yossi Berger, AWU).

Research also suggests the growth of sub-contracting may threaten the development of effective OHSMS through its disorganising effect on employer/employee relationships (Quinlan & Mayhew, 2000; Simard & Marchand, 1995), what Wright calls the *'endemic social disorganisation of work'* (Wright, 1994:100). It was noted in Section 4.5 that OHSMS audit tools generally exclude intangible hazards, such as the disorganisation flowing from outsourcing relationships. Quinlan and Mayhew take the view that

> *in at least some industries there is a real question as to whether even the most elaborate system can cope with the sheer logistical complexity that extensive outsourcing poses…in short, there are limits to the extent to which outsourcing can be accommodated by management systems, making more prescriptive regulatory controls appear essential* (Quinlan & Mayhew, 2000:190-91).

## 5.4 Labour Hire Arrangements

There was unanimous agreement in consultations that labour hire companies posed the greatest difficulty in relation to OHSMS. As contractors, labour hire companies are associated with the problems confronting contractors more generally (refer above). As employers, they have unique problems associated with the nature of the service provided and the work performed by their employees. In particular, OHSMS assume a relatively stable workplace, whilst labour hire employees are continually exposed to new workplaces with their associated OHS risks, hazards, and management practices. As minimal research has been completed on labour hire companies and OHS, this section draws primarily on information drawn from consultations.

The labour hire sector is extremely cost competitive, and is populated by a large number of small firms. Only a few large companies exist in this sector (KPMG, 1998; Underhill, 1999). This appears to have a strong negative impact on the willingness of labour hire companies to respond to OHS concerns.

- *They take a minimalist approach* (George McHugh & Steven Campbell, DETIR, Qld.).
- *They won't say no to a client just because the job is dangerous* (Ian Furness, WorkCover SA).
- *Constantly lowers the standard of anything to do with OHS* (Ian Gavin, Labor Council of NSW).
- *Labour hire companies see OHS as the client's problem – unless they have their own system* (Wayne Williams & Geoff Cremean, WorkCover, Vic.).

Employees of labour hire companies are often casuals, and based on overseas evidence, more likely to be constrained in their ability to refuse to accept work because of OHS concerns (Aronsson, 1999). According to Ian Gavin (Labor Council of NSW), labour hire workers in the building industry are invariably untrained, and their employer – supplying

workers across many industries – *'has no interest in OHS and is passing nothing on to them.'*
Clients utilising labour hire companies appear to compound the problem:

- *There is a tendency for client companies to distance themselves to ensure they're not seen as direct employees* (Liz Bluff, Uni. of SA)

- *If the demands of the labour hire company are too great with respect to OHS, the host will go to another source* (Anne Bellamy, CCIWA)

What, then, is the role of OHSMS in relation to labour hire companies? First, consultations suggested that when the client has an OHSMS, labour hire employees are generally excluded from its application. Instead, there is a tendency for the client to *'forget about the outsourced workers'* (George McHugh, DETIR, Qld. ). In some cases, this exclusion may be deliberate to ensure that the workers cannot legally be viewed as their own employees. Second, with the exception of some major labour hire companies, few are known to have OHSMS. The Recruitment and Consulting Services Association, the major employer association for labour hire companies, has issued guidance on OHS and induction training, with support from some State OHS authorities. However, scepticism prevailed in consultations concerning whether labour hire firms' management of OHS extended beyond on-site inspections prior to placement of employees. The limits of pre-placement inspections as a preventative OHS activity have been questioned in court cases and were noted in consultations (Richard Johnstone, Uni. of Qld.). Third, the presence of labour hire workers may undermine OHSMS at the client's workplace. Some clients utilise labour hire firms as de facto recruitment agencies, and are generally unwilling to train workers until they have assessed their suitability for permanent hire (Michael Costello, WorkCover, NSW). This places the labour hire worker in a similar position to casuals who, as noted above, are excluded from the OHSMS. A more common problem, however, is the *'more complex webs'* (Michael Quinlan, UNSW) which evolve with the presence of labour hire workers. OHSMS require the designation and unambiguous allocation of responsibilities for OHS. Labour hire workers *'…complicate their work processes, fostering disorganisation and attenuating decision-making processes'* (Quinlan & Mayhew, 2000:190). In this way, labour hire workers are not only excluded from the client's OHSMS, but create weaknesses in those systems.

It was agreed in consultations that the application of an OHSMS within a labour hire company would be less problematic when the company specialised in a particular occupational group or skilled labour. Consistent practices may then evolve over time – although inconsistencies between labour hire and client OHSMS would still arise. For companies providing a broad range of occupations across industries, practicalities abound. *'They would need to have an approach that is suitable for every workplace'* (Anne Bellamy, CCIWA).

Consultations elicited only one example of a small labour hire company taking a systematic approach to OHS. In this case, the company applied a client audit checklist prior to worker placement; equipment and the like was inspected in advance; and a post-placement review with the worker was recorded for future reference (Andrea Shaw, Consultant). Such an approach is evidently rare, and discouraged by the very nature of the industry. Cost pressures are more likely to contribute to the more common attitudes of companies noted in the consultations.

## 5.5 Summary

The implementation of OHSMS confronts barriers in several important and growing sections of business. These are summarised below.

### Significant barriers to OHSMS effectiveness have been identified in the following situations:

**Small Business**
- Lack familiarity with systems generally
- Lack an understanding of OHSMS
- Cost pressures divert attention to other business needs
- Pilot projects adopting alternative approaches to OHS management in small business are yet to be fully evaluated.

**Part-time and Casual Employees**
- OHSMS assume a stable workforce – the opposite to casual and some part-time employment
- OHSMS do not facilitate the involvement of part-time and casual employees in OHS
- Casual employees are least well equipped to participate in OHS issues and systems.

**Contractors**
- Encounter small business constraints identified above
- May adopt OHSMS for tendering purposes without implementation
- May encounter difficulties arising from inconsistencies between the subcontractor and principal contractor's OHSMS
- May have the principal contractors' OHSMS imposed without accommodation or explanation
- The 'disorganisation of work' associated with contracting may weaken existing OHSMS
- A change in contractors' attitudes towards OHS may develop from their exposure to OHSMS through tendering requirements.

**Labour Hire Firms**
- OHSMS assume employees' familiarity with their workplace, but labour hire employees are regularly exposed to new workplaces
- OHSMS appear to be implemented only in large labour hire firms – arguably for little real benefit
- Intense competition amongst labour hire firms discourages labour hire firms from prioritising their own and their client's OHS practices
- Labour hire employees are generally excluded from the client's OHSMS
- The 'disorganisation of work' associated with labour hire employees may weaken the client's OHSMS.

# 6. LESSONS FROM QUALITY MANAGEMENT FOR EVALUATING AND MEASURING OHSMS PERFORMANCE

Quality Management (QM) is examined in this Report as the challenges of evaluating effectiveness and performance measurement are similar to those confronting OHSMS. However, QM has been evaluated more extensively than OHSMS. Whilst extreme caution must be observed transposing findings from one area to the other, research upon the effectiveness and evaluation of QM may suggest pointers for OHSMS.

Quality Management originated in the 1920s with the development of statistical techniques for assessing actual quality against standards. Over time a number of different approaches to Quality Management have evolved including quality control (QC), statistical quality control (SQC), total quality control (TQC), quality assurance (QA) and total quality management (TQM) (Nettle, 1995). A distinction is sometimes drawn between 'hard' techniques such as statistical analysis of quality variation, and 'soft' techniques. TQM is an example of the latter, emphasising social processes by which employees, often in teams, assume responsibility for monitoring and improving quality (Dawson, 1996).

TQM became widespread in Australia during the 1980s through the influence of well-known American and Japanese theorists and through business consultants. Rather different was the government assisted diffusion process by which 'Best Practice' was popularised in the early to mid 1990s (Rimmer et al., 1996). Sharing with TQM and Kaizen techniques a common emphasis upon 'continuous improvement through empowered teams', Best Practice was also influenced by the self management approach drawn from 'socio-technical systems theory', and by a requirement for wider partnerships with government and labour in productivity improvement (Mathews, 1994; Dertouzos, Lester & Solow, 1989). In North America similar techniques came to be known by a variety of titles one of which was High Performance Work Organisation (sometimes also 'Mutual Gains', 'High Performance Work Systems' and 'Best Practice') (Kochan & Osterman, 1994; Appelbaum, et al., 2000).

There are important differences between TQM, Best Practice and High Performance Work Organisation (HPWO). For example, TQM is characterised by statistical methods to identify quality problems, Best Practice by 'best in class' performance benchmarks, and HPWO by performance incentives and employment security. Differences may also be found in the strength or independence of workforce participation. Offset against such variance is a strong core of common principles - that work is organised to allow front-line workers to participate in continuous improvement decisions. In recognition of this basic similarity, we shall refer to these somewhat diverse movements collectively as Quality Management.

Closely allied to QM are related developments in quality assurance and accreditation. In Australia the founding of the Australian Organisation for Quality Control (since incorporated into the Australian Quality Council) in 1967 marks the beginning of external quality assurance through formal documentation of procedures for quality control. The development and use of such standards became more widespread and important in the 1980s and 1990s, culminating in the adoption in 1994 of International Organisation for Standardisation (ISO 9000) terminology. The nature of quality standards was described by Brown and Wiele:

> *Essentially, the standards prescribe a number of dimensions on which an organisation, either manufacturing or service, can be assessed by an external party (a certification organisation, which itself has been accredited by a national accreditation body). If the quality system meets the standards during an audit process by an accreditation company then a*

> *certificate is issued and the organisation can claim it meets ISO 9000 standards and is free to pursue this for whatever purpose it requires* (Brown and Wiele, 1995:8).

Clearly the quality assurance process (external audit and accreditation) should be distinguished from that of implementing QM (empowering work teams for continuous improvement).

QM (including QA) has influenced the development of OHSMS in Australia, and there exist points of resemblance between the two. Thus the participative approach to OHSMS shares with Best Practice the common elements of an operational system to deliver continuous improvement supported by both an empowered workforce and senior management. The goals may differ - improved OHS outcomes for one and improved competitiveness and workforce equity for the other - but the methods are fundamentally the same. Similarily, OHS audit tools (such as NSCA Five Star, SafetyMAP, and AS4801) are OHS applications of quality assurance tools.

## 6.1 Similarities and Differences Between OHSMS and QM

Despite the procedural and substantive similarities between OHSMS and QM, the literature and the consultations warn us that OHSMS have special characteristics that differentiate them from quality (or production) management. Four reasons were given for this.

**(i) Obligation to consult**

Employee stakeholders have essential rights to consultation in an OHSMS, in contrast to their contingent involvement in production (or quality) systems. As Frick et al. (2000:6) state *'…as workers are the ones exposed to hazards, they should have a right to monitor and influence how their employers manage these hazards'*. This view was widely expressed in the consultations by union, employer and government agency representatives. For example, *'safety is not purely management property - the employee has a right to a direct say'* (Ian Furness, WorkCover SA).

It was noted in Section 4.6 above that AS4801 (Standards Australia, 2000) does refer to employee consultation, but does so in a limited fashion, confined more to procedural matters than integrated into all OHSMS components.

**(ii) Relation to the Law**

OHS procedures and substantive rights are regulated by law in contrast to quality and production, which generally are not. A number of experts remarked during consultations on the problematic relationship between OHSMS voluntary standards and the law, expressing concern that audit compliance may be seen to vitiate legal responsibility. As one expert observed, *'OHSMS give employers something to hide behind to get out of their responsibilities'* (Cathy Butcher, VTHC).

It should be noted that AS4801 points out that *'compliance with this standard may not necessarily meet your OHS legal obligation'*, and explains some aspects of the relation between standards and law (AS4801 - 2000).

**(iii) Measurement**

OHS Key Performance Indicators (KPIs) can work differently from quality or production KPIs. The possibility exists that some measures showing success can weaken commitment to further continuous improvement, whereas the opposite is more likely under TQM or Best Practice. One employer representative noted, *'once OHSMS have been put in place and accident statistics fall, the drivers go away. In this sense OHS indicators are different from other drivers like profits or productivity'* (Anne Bellamy, CCIWA).

**(iv) Priority for Management**

OHSMS can be given lower priority and fewer resources than QM systems. One consultant observed this 'poor relation' feature of OHSMS in situations where management seek to integrate them with general QM systems:

> *Organisations do not like to have a series of mutually exclusive systems…they (the consultants) analyse existing systems (typically ISO 9000 types) and see where the OHSMS can be integrated with other existing systems. In most cases, their clients think they have an OHSMS in place and are looking for ways to make it better. In reality, they may not even have an OHSMS in the first place* (David Caple, ESA).

The literature and consultations continually emphasised the risk that OHSMS may be marginal to management interests in a way that production and quality systems are not.

For these reasons the parallels between quality assurance and OHSMS standards should be treated carefully.

## 6.2 Internal Evaluation of QM: Designing Performance Measures

Validating the effectiveness of QM interventions has challenged analysts for a number of years. The problem has attracted attention for several reasons including:

- Requirements to evaluate national policies encouraging workplace interventions to improve productivity or some other aspect of performance.
- Need for managers to demonstrate a return on investment (ROI) to justify QM intervention costs (especially training costs).
- Need to demonstrate to stakeholders that QM interventions have achieved objectives.

It is helpful to distinguish between 'robust' and 'persuasive' tests of the effectiveness of QM interventions. On the one hand, those conducting an external evaluation of workplace interventions from a policy research standpoint are likely to require robust proofs of effectiveness to allay scepticism. On the other hand, managers, work-teams, and other 'insiders' or internal stakeholders will often share common experience and knowledge which may allow them to make use of evidence and analysis that is persuasive rather than conclusive.

A typology of evaluation methods spanning both 'robust' and 'persuasive' types has been identified for demonstrating the return on training investments. Training programs share common characteristics with OHSMS which make evaluation useful but difficult (Green, 1994:13). Drawing on Kirkpatrick's four-level model of training evaluation (Kirkpatrick, 1987), the Office of Technical and Further Education (OTFE), distinguished four stages of evaluation and six evaluation techniques (OTFE, 1997). The stages and techniques are shown below:

**OTFE - 4 Stage Model of Training Evaluation**

- Budget: the simplest form of evaluation. Was the budget spent?
- Skills: training is evaluated on the basis of functional and operational needs.
- Project: evaluates contribution of training to the overall project
- Strategic: the highest form of evaluation, to optimise organisation wide allocation of training resources.

**Six evaluative techniques are linked to different stages of training evaluation**

- Budgeted targets
- Subjective analysis after training
- Competencies gained
- Competencies applied
- Quantitative analysis of training on organisational performance
- Strategic evaluation.

Quantitative analysis of the impact of training on organisational performance requires 'robust' tests using high quality data (on training costs and benefits and measures of overall performance) which is then subject to multivariate analysis (to isolate benefits attributable directly to training), and calculations of return on investment (Doucouliagos & Sgro, 2000). Robust training evaluation also requires comparisons, either between a single workplace over time (as its training investment changes), or between matched pairs of workplaces (with different levels of training investment). Relatively few large businesses can use complex quantitative methods by themselves to evaluate training investments. Most often they rely on the more accessible 'persuasive' methods such as budget expenditure or subjective evaluation of training.

Fundamental to the analysis of the effects of QM workplace interventions is productivity data. As a ratio of outputs to inputs, productivity measures are essential to show the precise impact of QM tools which aim to induce greater efficiency in the use of labour by improving the 'intensity of collaboration' between employees and management. Australian workplaces have traditionally performed poorly in collecting and analysing data upon workplace productivity. Comparative research conducted for the Business Council of Australia in the late 1980s found Australian workplaces less likely to collect such data than North American and European counterparts that were similar in product, technology and size (BCA, 1989). The 1990 Australian Workplace Industrial Relations Survey (AWIRS) found only 26% of all workplaces collected productivity data, whilst 64% of large workplaces (500+ employees) failed to do so (Green, 1993:5).

It appears that most managers in the past relied exclusively upon financial and market indicators of performance without looking at productivity measures that might allow an accurate diagnosis of factors affecting performance. Equally, financial and market data tends to reflect aggregate performance of business units remote from the employee or 'work team' and thus unlikely to reflect efforts at that level and guide or motivate future performance. Existing methods of performance measurement appeared to be inadequate

to support the QM interventions growing in popularity at that time - enterprise bargaining, TQM, and Best Practice (Frenkel, 1989; Green, 1993).

The Australian government's Best Practice Demonstration Program (1991-96) introduced many businesses to the idea that new performance measures were required which were *'relevant to the internal organisation of the firm and its strategic position in the product market'* (Dertouzos et al., 1989: 133). Amongst the proposed measurement methods were:

- **Activity-Based Costing (ABC):** An internal cost-accounting system that allocates all costs to product or customer driven 'activities' (Johnson & Kaplan, 1987; O'Guin, 1991). Potentially complex and costly, ABC could serve to sharpen cost awareness and customer orientation at and below the departmental level whilst facilitating strategic review. Although not new in the 1980's, ABC was widely endorsed as a good fit with new production management systems such as Just-in-Time.

- **Benchmarking:** A technique for setting internal performance targets in relation to external 'best practice'. Several variants of benchmarking were popularised, including 'process benchmarking' (seeking best practice in generic processes such as logistics, quality control and so on) (Macneil et al., 1994). Its earlier use as a 'learning tool' now seems to have been supplanted by quantitative benchmarking in which firms assess their performance on 'Critical Success Factors' relative to industry quantitative standards (Miller et al., 1992).

- **The Balanced Scorecard:** A synthesis of four types of measures relating to finance, the customer's perspective, internal business processes and learning/growth (Kaplan & Norton, 1992, 1996). The Balanced Scorecard approach reflects and combines measures of major stakeholder interests, and facilitates disaggregation to assign costs and motivate employees.

- **Key Performance Indicators (KPIs):** Popularised through the Best Practice Demonstration Program, these are devolved activity measures of department or team performance. Often developed at the team level, they are intended to both motivate and measure discretionary effort upon variables of strategic significance.

The 1995 AWIRS Survey produced evidence to suggest that modern performance measures of this kind have become very common. Whilst productivity measures (of labour or total factor productivity) remained rare (used in only 14% of workplaces), 67% of workplaces benchmarked themselves against other workplaces (most often on customer satisfaction, quality and operational processes) and 84% used KPIs (Morehead, et al., 1997:104-107). Furthermore, participative approaches to developing such measures were common, employees playing a role developing KPIs in 39% of workplaces.

**Issues in QM performance measurement relevant to OHS measures include the following:**

- A hierarchy of measurement techniques may be identified spanning 'robust' and 'persuasive' tools. Whilst technically feasible, the former will be impractical and unnecessary in many businesses.

- Traditional outcome indicators (financial and sales measures for QM and Lost Time Injury Frequency Rates for OHS) have well documented limitations in terms of diagnosing problems and measuring and motivating discretionary effort.

- Multiple outcome measures are preferable to single measures, to balance various stakeholder interests (the Balanced Scorecard approach) and to link internal efforts to external standards. Whilst internal measures (KPIs) may be customised to the organisation, external measures (Benchmarks) are more likely to capture common industry measures.

- Employee involvement in the development of measures is widespread in QM and serves to ensure the functionality and acceptance of KPIs. For these purposes, simple measures seem to be preferred.

In the OHS arena, widespread support exists for the use of Positive Performance Indicators (PPIs) to measure OHS performance. The principles on which PPIs have been developed appear to owe much to QM innovations such as benchmarking, KPIs and the Balanced Scorecard approach (Worksafe Australia, 1994). It is not known to what extent OHS PPIs have grown in use to match the general use of benchmarking and KPIs.

## 6.3 External Evaluation of QM: Evidence from the USA, UK and Australia

Whilst there are many anecdotal accounts that QM delivers spectacularly higher business performance, it is generally agreed that *'example is not proof'* (Pfeffer, 1999:31). The difficulties of proving the delivery of the hypothesised benefits of QM have been summarised by Osterman, writing about HPWO in the USA. He argues as follows:

> *The widespread interest in innovative work systems (HPWO) stems in part from the perception that firms that adopt these techniques outperform those that do not. There are several possible reasons why this might be true…It is hard to research and prove these arguments. Classical random assignment or medical type experiments (in which randomly selected firms adopt the systems and others do not) are obviously not possible. Absent this, the basic technique is to see if firms that use the systems do better either compared with other firms that do not use the systems or compared with their own performance in the past. Both strategies provide useful information, but both can be criticised. Statistically, matching one firm with another is not a perfect process. Furthermore it is possible that the direction of causality runs from doing well to adopting the systems rather than the reverse. Finally, perhaps the only firms that adopt the systems are the ones that know they will work, and hence there is no reason to suggest that results from one firm would be relevant to another* (Osterman, 1999:101).

To this last can be added three other methodological problems. The first concerns the specification of HPWO inputs. All authorities agree that there are many variants of QM, each containing several elements (many common to several variants of QM) which, in theory, should be applied in a systematic or integrated way if results are to be expected. However, the authorities do not agree precisely which combination of ingredients or elements works (Becker & Gerhart, 1996). To the contrary, 'contingency' (Dunphy & Stace, 1990) and 'Best Fit' theorists (Purcell, 1999) argue that workplace differences affect the configuration of elements that may be employed (Lowe et al., 1997). How, then can the researcher be sure what elements to test and in what combination?

The second problem concerns performance or outcome measurement (Guest, 1997; Wooden, 2000). Most survey research on QM rests upon subjective relative assessments of productivity since productivity is too complex to evaluate directly. But it has been questioned whether reliance can be placed on manager responses to questions comparing their productivity with their competitors (Rimmer & Watts,1994). The most accessible objective measures of QM performance are also problematic. They concern corporate

performance -profit, sales growth, share price and the like which are difficult to correlate with interventions which impact initially at the team or plant level. Outcome measures must clearly be chosen carefully, and yet may still be open to objections that they fail to capture the precise effects of QM.

The third problem concerns time lags. Most QM interventions take several years to become effective. Longitudinal case study fieldwork can capture the slow processes of experimentation, evolution, and acceptance to get QM to succeed (Pettigrew, 1990; Wright & Edwards, 1998). However, such research methods are mainly used to generate theory rather than to test it.

Despite these methodological difficulties, there exists a large body of research seeking to demonstrate the effects of QM. First, there is widespread agreement amongst US researchers that HPWO works (Ichniowski et al., 1996). Most influential have been industry studies of the effects of 'bundles' of HPWO practices on productivity and quality, controlling for variations in technology, work organisation and the like. Relevant here are studies in the automobile industry (MacDuffie, 1995), steel (Ichniowski et al., 1997) and clothing (Berg et al., 1995) which found positive results from HPWO. Also influential have been the MIT industry studies of best practice (Dertouzos et al., 1989; and Lester 1998) which investigated the common characteristics of successful firms within key manufacturing industries (the most recent study identifying 'inner voices' or corporate beliefs as a vital ingredient. In addition, a number of general surveys have found positive results for 'high commitment' human resource management - a part of HPWO (Huselid, 1995). Lastly, reference should be made to a recent study of HPWO in three industries (steel, clothing and medical equipment) which emphasised the importance of employee participation in decision making (Appelbaum et al., 2000). This study is of interest not solely because it correlated HPWO positively with a comprehensive set of economic performance indicators, but because it also found a positive association with lower levels of work-related stress.

In contrast, British research on QM is both critical of US research (usually for using large scale survey evidence that is insensitive to QM inputs and outcomes) and less certain of the effects of QM in Britain (Purcell, 1999; Edwards & Wright, 1999). The main large scale British study of QM uses survey data from the 1990 Workplace Industrial Relations Survey and the Employers' Manpower and Skills Practices Survey to explore the incidence and configuration of High Commitment Management (HCM) which comprises a number of elements (Wood & de Meneses, 1998). These elements are skewed towards human resource factors and away from operations and quality practices. The data is then correlated with several outcome variables including subjective estimates of relative productivity, productivity change, and relative financial performance. The first of their findings was the existence of consistent patterns in the way HCM elements are combined. The second finding was that *'high users, in common with low users of HCM, do perform better in terms of profitabilty and job creation…(although) on other dimensions, HCM had little effect'* (Wood & de Meneses, 1998:507). High Commitment Management is neither uniquely nor uniformly successful.

Finally, there have been several Australian research studies on the effects of QM. The best large scale surveys upon workplace practices (the 1990 and 1995 Australian Workplace Industrial Relations Surveys) asked only a few questions on QM practices (Callus et al.,1991 and Morehead et al., 1997). However, one secondary analysis of the 1990 survey found a positive relationship between some HPWO variables and performance. There have also been several multi-case study projects which have also reported positive results from Best Practice (Mathews, 1994), although considerable implementation difficulties were also discovered (Rimmer et al., 1996). Finally, in 1993 a survey was undertaken of 4,000 Australian and New Zealand manufacturers (1,289 responses) sought to test the effect of 'Best Practices' using survey questions based primarily on multiple quality awards (Australian Manufacturing Council, 1994). The survey purported to find such practices yielding positive commercial results. However, this research has been

criticised both because the input data was questionable and because 'leaders' and 'laggers' (rated by their score on a best practice index) seemed equally likely to record high performance outcomes (Ergas & Wright, 1994). A more limited re-analysis of the same data found that the use of TQM correlated positively with performance (Samson & Terziovski, 1999). Finally, note should be made of a recent study examining the performance effects of good management in business (Samson, 1999). This study looked behind the frequent failure of TQM to test 14 broader management principles for success (thus incorporating and expanding upon the elements of TQM). While this study claims to show a relationship between 'good management' and high performance, this relationship cannot be said to extend to the more specific forms of QM discussed here.

The research evaluating QM has several implications for OHSMS.

- First, the research tends to show positive performance results arising from continuous improvement methods. This may imply - by extension - that OHSMS can work.

- Second, the research suggests there is no automaticity about success and QM methods do not always succeed. Again, whether OHSMS are effective cannot be guaranteed.

- Third, the selection and combination of elements to constitute QM shows sufficient variance as to support a 'contingency' approach. There may also be no one best way of constructing an OHSMS.

- Fourth, much QM research tends to support the proposition that effective employee participation is a necessary condition for success. This aligns with similar claims about the conditions for an effective OHSMS.

## 6.4 Lessons from QM

In this section parallels were drawn between the cluster of techniques termed QM and OHSMS. On the one hand were the complex and diverse QM systems that shared with each other and with participative approaches to OHSMS an emphasis upon 'organisation of the workforce to allow their participation in continuous improvement decisions'. On the other hand, Quality Assurance (QA) influenced and resembles the auditing systems associated in Australia with OHSMS.

The reason for examining QM was to explore findings on effectiveness and performance measurement that might be relevant to OHSMS. As a cautionary point, several points of difference were suggested between QM and OHSM concerning the obligation to consult, the relation to the law, tendencies in measurement, and priority or importance to senior management.

A distinction was drawn between 'internal measures' - or methods of performance measurement, and 'external measures' or evaluation techniques. It was noted that 'persuasive' measures may be more apt for the former and 'robust' measures for the latter.

The main lessons from QM for OHSMS are as follows:

# Applying QM Measures to OHSMS

## Internal Evaluation

- Traditional measures (LTIFR) are poor in problem identification and motivation
- Benchmarking (target setting) and KPIs (motivational and operational targets) have counterpart OHS measures – PPIs – although the extent of their use is unknown
- Employee involvement in KPI formation encourages 'comprehensible' measures relevant to workforce tasks
- The 'Balanced Scorecard' (measuring finance, customer responses, internal business processes and learning/growth) has potential OHS applications.

## External Evaluation

- Extensive research shows QM delivers positive results; by extension OHSMS can succeed
- Whether QM (or OHSMS) succeed depend on how they are implemented, and in particular adaption to organisational requirements.

# 7. MEASURING OHSMS PERFORMANCE

We come finally to our third question, how can OHS outcomes and OHSMS performance best be measured? Trends in Quality Management performance measurement, discussed in the previous section, have contributed to a reappraisal of performance measurement in OHS, in theory if not in practice. Of particular note is the trend away from reliance on traditional outcome measures towards a preference for multiple measures which can take account of various stakeholder interests and assist external benchmarking. Less attention has been given to the trend in QM towards employee involvement in the development of measures. The discussion of QM also draws attention to the differences between Quality Management and Quality Assurance, the former focussed on empowered work teams and continuous improvement and the latter on external audit and accreditation. Quality audits have a particular and limited role in the overall measurement of quality performance. However, in the OHS arena, audits of OHSMS appear to be assuming a larger and perhaps inappropriate role as a primary measurement tool.

More generally, there are two main types of measures for evaluation of OHSMS performance. First are the conventional outcome measures of incidents and compensation claims. Second and more novel are Positive Performance Indicators (PPIs) which may be developed on a workplace or industry basis, may involve employees and other stakeholders in the development of relevant measures, and may also monitor aspects of the management system. The first two parts of this section discuss these approaches. The third discusses the role of the OHSMS audit. The final part introduces the 'Balanced Scorecard' approach to measurement of OHSMS effectiveness.

## 7.1 Problems of Conventional OHS Outcome Measures

Analysis of the effectiveness of OHSMS requires valid and reliable measures of system performance. The difficulties associated with measuring performance in OHS constrain both effective measurement of OHSMS performance in the workplace and the efforts of researchers to assess their worth. Most studies on OHSMS effectiveness have relied on 'best available' recorded injury or workers' compensation data as the measure of performance despite acknowledged limitations on their use as objective evaluation criteria.

The limitations of traditional outcome measures are well documented. At one level, the very nature of the workers' compensation processes and systems limits the usefulness of claims data as a measure of performance. James (1993:34) for example, notes the considerable margin for error in the process of claims reporting and acceptance. Quinlan and Bohle (1991:20) note the omission of short-term injuries and illnesses and particular work-related illnesses from claims statistics, the historical delays in recognition of particular injuries and diseases and resulting short-term bulges, in some systems the exclusion of populations such as the self-employed and subcontractors, and in others the lack of encouragement of these groups to participate in the compensation process.

Available studies on reporting and under-reporting of work-related injury and disease underline the questionable use of both compensation and enterprise level outcome data as valid objective measures of performance. James (1993) found systemic under-reporting in a
study of over three hundred injured and ill workers in a variety of industrial processes. A Queensland review of studies (Division of Workplace Health and Safety, 1994) found alarming levels of under-reporting. In one study, of work-related farm injuries, a mere 7.7 per cent had resulted in workers' compensation claims. In another study, an Australian Bureau of Statistics survey found only 47 per cent of respondents with a work-related injury had submitted a claim for compensation.

The reporting and recording of disease levels is a cause for further concern, given the well documented bias in compensation statistics towards representation of injury incidence

and under-representation of disease (Hopkins, 1994:83). This bias reflects not only factors relating to disease such as long latency between exposure and some disease outcomes, but also a medical profession frequently ill-equipped to recognise and deal with work-related disease (Division of Workplace Health and Safety, 1994:14).

The reliance on workers' compensation data for prevention purposes may be further compromised by the unintended effects of compensation premium incentive schemes (Hopkins, 1995; Larsson, 1994). Hopkins notes (1993:182) that compensation premium incentive schemes aimed at stimulating prevention effort may provide an incentive for employers to minimise reported claims at the expense of prevention activity. The confounding impact of claims and rehabilitation management on injury/ill-health outcome data was identified as a measurement constraint in Gallagher's study. Case study enterprises with positive injury outcome trends generally had active OHS, claims and rehabilitation management strategies and could not unravel the relative contributions of the separate systems (Gallagher, 1997:222).

Shaw and Blewett (2000:466) have detailed further limitations of injury/ill-health outcome data. First, they have particular difficulty measuring the effectiveness of control of high consequence, low probability risks. Second, they measure failure, not success. Third, they fluctuate at random. Fourth, they reflect the success, or otherwise, of safety measures undertaken in the past. Fifth, they measure injury frequency and severity, not necessarily the potential seriousness of the incident. Sixth, they conceal the range of other influences on outcomes. Finally, they focus attention on the individual worker, not the environment.

What use can be made of traditional outcome measures? Many consultations supported the use of traditional outcome data measures as appropriate measures of performance in the longer term. In the end, the measure of OHSMS effectiveness has to include an appreciable, positive change in the level of risk in an enterprise and the incidence and severity of injury and illness. However, as Warwick Pearse (UWS) noted, the need is not just for long term outcome data, but for *'better statistics'*.

The limitations of traditional outcome measures have prompted the search for more relevant and reliable performance measures focussed on improvement in process rather than outcome (Shaw and Blewett, 1995; WorkSafe Australia 1994; Amis and Booth, 1992).

## 7.2 Alternative Measures: Positive Performance Indicators

As defined in a recent NOHSC publication (1999a:4):

> *Positive performance indicators - focus on assessing how successfully a workplace or enterprise is performing through monitoring the processes which should produce good OHS outcomes. Positive performance indicators can be used to measure relevant OHS systems, processes, management and compliance with OHS practices in the workplace. Examples of positive performance indicators include the number of safety audits conducted; the percentage of sub-standard conditions identified and corrected as a result of the safety audit; and the percentage of workers receiving OHS training.*

The NOHSC publication goes on to identify the advantages of using process or positive performance indicators as:

- The ability to measure and evaluate the effectiveness of OHS management.

- The provision of immediate feedback mechanisms regarding the management of OHS.

- The capacity to make immediate improvements if required.

There are also limitations in using positive performance indicators, including the familiar problem of random fluctuation and reporting distortions (NOHSC, 1999a:4). Nevertheless, particularly when used in conjunction with outcome measures, positive performance indicators can offer a comprehensive overview of health and safety management performance and assist the search for the underlying causes of work-related injury and illness (NOHSC, 1999; Bottomley, 1994:151).

Examples of organisational and system process indicators are readily available in the OHS measurement literature (Shaw, 1994:26, Waring, 1996:148-149; NOHSC, 1999a).

In consultations, stakeholders expressed strong support for the use of positive performance measures to assess OHS performance in the short-term and little support for traditional outcome measures for short-term performance assessment. There was a caution, however, that positive performance indicators *'must measure what matters most'* (Liz Bluff), including hazard identification, exposure to risk, risk control measures and the gaining of competencies in OHS by managers and employees.

While positive performance indicators are enterprise-based measures, they can be developed along industry lines. There was strong support among stakeholders consulted for the development of industry-specific process indicators. For the purposes of this review, the development of process indicators on an industry basis has two advantages. Firstly, it can provide assistance to workplaces in tackling the difficult job of working out how to best measure performance on an ongoing basis. Secondly, it also can provide a sound basis for comparative performance assessments over time.

The recent NOHSC (1999) report *OHS Performance Measurement in the Construction Industry - Development of Positive Performance Indicators* provides a model for the development of positive performance indicators on an industry basis. The report was the product of a tripartite industry working group and was grounded in information collected from enterprises in the four sectors of the industry - commercial, civil, heavy engineering and domestic construction. The case study approach allowed for the collection of information on existing indictors used in the respective industry sectors and the identification of new indicators relevant to the various sectors, as well as the identification of key drivers of improved OHS performance. The resulting positive performance indicators were grouped under five broad headings, namely planning and design, management processes, risk management, psycho-social working environment and monitoring.

Stakeholder consultations drew attention also to the need for the direct assessment by workers and their managers of the success or otherwise of the operation OHSMS in the workplace. As Peter Moylan (ACTU) put it:

> *There is a need for workers to frankly and vigorously assess the effectiveness of OHSMS. Managers can also give feedback.*

The assessment by workers and managers of the success of OHSMS initiatives is consistent with the models of development and levels of achievement of OHSMS identified by Frick and Wren (2000:38) and discussed earlier in this Report. Aside from the first level of meeting specifications and the second level of 'doing things right', OHSMS at a third level must also 'do the right thing to fulfil the wishes and needs of the users'. The aim of the third level is continuous improvement of enterprise goals. The need would appear to exist for consideration to be given to appropriate techniques for measuring worker and manager feedback, while taking account of the limitations of safety culture measurement techniques (Waring, 1996:167). The further development of alternative

performance measures on an industry basis could incorporate appropriate methodologies for rigorous and informative employee and manager feedback mechanisms. In addition, and in line with the lessons from Quality Management, further attention should be given to employee involvement in the development of OHS performance measures.

## 7.3 OHSMS Audits as a Performance Measure

The examination in Section 4 above of the appropriate role for audit tools and standards notes their close association with the development of OHSMS in Australia. The audit also appears to be assuming a role as the primary tool for measuring system effectiveness. Where should OHSMS audits fit on the measurement spectrum? What is their appropriate role? The problems identified in consultations with the use and misuse of audit tools suggests the need to further explore these questions.

Waring (1996: Chapters 9 and 10) provides a clear and useful outline of the concept of the OHSMS audit and its role in monitoring and measuring OHS performance. Waring notes that performance measurement needs to be an ongoing process of monitoring progress and outcomes, that is, comparing performance against control objectives and performance criteria. He calls for a broad range of performance measures, including both quantitative and qualitative. He also claims the need for both reactive data (usually injury outcomes), and proactive data (positive or process performance indicators). As part of the ongoing measurement process, audit results can feature among many possible process performance measures. The main function of the OHSMS audit, of course, is the holistic examination of the overall OHSMS and its components in order to detect any deterioration of system adequacy that may not be evident in ongoing performance monitoring and measurement.

The infrequent nature of the OHSMS audit clearly militates against its use as a primary tool for measuring the effectiveness of OHSMS. Waring (1996) identifies a number of issues that are relevant to this discussion. The first issue is the need to draw a distinction between two types of audits, namely the 'validation audit' and the 'verification audit'. The former assesses the validity of the OHSMS design and overall system integrity in the organisation, that is whether the system *'is capable of delivering the required level of safety appropriate to the organisation...and its context'* (Waring, 1996:170). The latter concentrates on the extent of compliance by the organisation with its own OHS policies, procedures and standards and with external legislation and standards. Waring notes the considerable confusion between the two, with the meanings typically conflated and emphasis typically placed on the compliance or verification objective at the expense of appropriateness and relevance, an emphasis fuelled by the compliance oriented definition of audit in certain specification standards. While both types of audits have their place, the validation audit will be of more value in assessing the effectiveness of the OHSMS. As Waring (1996:171) puts it, *'the whole point of a validation audit is to avoid the organisation comparing itself with itself'*.

A second issue identified by Waring (1996) is the need for caution in adopting a quality assurance approach to OHSMS auditing. The prevalence of the quality auditing method (which examines evidence of compliance with procedures) weakens the focus on system effectiveness by diluting the need for auditors to have specialist knowledge. Further, insistence upon corroborating evidence in quality-style audits may lead the auditor to disregard significant OHS issues. Waring (1996:172) identifies four points which should distinguish OHSMS audits from quality-style audits. In OHSMS audits:

- The auditor should possess adequate, if not advanced, knowledge of safety management and/or technology and OHS legislation.

- In addition to examining documentation, the auditor must formally interview a reasonable sample of people and examine workplace OHS conditions.

- A multidisciplinary audit team typically will be required to cover the key items.

- All evidence which may be significant must be considered.

Waring's (1996) third issue concerns the choice of audit tool and in particular the choice between a proprietory audit tool or one developed by the organisation. Whilst he sees advantages for the new starter in adopting an 'off-the-shelf' tool, he advocates the development of organisation-specific tools.

The problem of the relevance of generic audit tools for meeting contingent business and workforce requirements was also raised in consultations. Experts consulted on this issue advocated the use of audit tools developed by the particular organisation and tailored to its specific needs.

More generally, concerns expressed in consultations raise two further issues about the use of audit for OHSMS measurement. First, there are dangers inherent in the tendency for OHSMS audits to be used as the primary measurement tool. It can lead to a situation where OHS processes are seen as an 'end in themselves' rather than a means to improve OHS outcomes. While the need for a more comprehensive approach to OHS performance measurement has been promoted (see Worksafe Australia, 1994), anecdotal evidence suggests slow take-up at workplace level.

Second, a primary focus on OHSMS audit for measuring performance highlights the quality assurance aspects of OHSMS rather than the broader quality management approach. In particular it can lead to an instrumentalist approach criticised in the consultations. It may, for example, undermine the objective of improving OHS and erode established consultative arrangements.

## 7.4 Where to next? A 'Balanced Scorecard' for OHSMS?

A dilemma arises in the search for the best measures of OHS and OHSMS performance. Most businesses would like simple, low cost measures – a single indicator or composite measure of performance. However, OHS experts agree that no such measure can be completely adequate. What this section has shown is the scope for unreliability if each of the main alternatives – incident and claims data, PPIs, and audit – are used in isolation from each other. Most OHS experts agree that different measures need to be combined to give a satisfactory overall evaluation. How can reliable measures be developed and improved?

Following Kaplan and Norton's (1996) balanced scorecard approach offers one model. A balanced scorecard is a methodology to integrate several different but vital indicators. This approach to OHS performance was advocated by Green (1994) but not developed. Such an method was also mentioned in Section 6 above.

A balanced scorecard to evaluate overall business performance has two principle characteristics:

(i) The identification of important measures (relating to financial perspectives; customer perspectives; internal business process perspectives; and learning and

growth perspectives). These four perspectives are generic categories for information; how they are translated into data will vary between organisations.

(ii) A strategic decision-making framework which integrates data from the four perspectives. The business strategy is not a theoretical model – it is an activity by which businesses apply data to strategy.

The core elements of an OHSMS balanced scorecard need to take account of the different characteristics of an OHSMS (set out in Section 2) and the different types of data available on OHS, discussed above. The proposed OHSMS balanced scorecard is shown below.

# An OHSMS Balanced Scorecard

| Perspective | Dimensions of OHSMS | Measurement Objective (examples) | Type of Data |
|---|---|---|---|
| Business Organisational & Financial Perspective | All OHSMS | Capture qualitative and quantitative outcome data to review performance | Reputational, claims & benchmarking data |
| Stakeholder Perspectives:<br><br>Internal<br>(such as employees)<br><br>External<br>(such as Government agencies, trade unions, contractors etc.) | Voluntary/Mandatory | Monitor outcomes<br><br>Employee satisfaction with OHSMS effectiveness<br><br>Compliance of OHSMS with Government & other external stakeholder requirements | Incident data<br><br>Employee feedback mechanisms; PPI data<br><br>External stakeholder feedback (including the use of PPI & audit data) |
| Internal Business Process Perspective | Safe Person/Safe Place<br><br>Traditional/Innovative management structure/style | Incidence and quality of OHS training<br>Measures to identify, assess and control hazards<br><br>Assessment of senior management activity and level of involvement<br>Assessment of integration into general management systems<br>Assessment of extent and quality of employee involvement | PPI data<br>PPI, audit and benchmarking data<br><br>PPI, audit & benchmarking data; manager and employee feedback |
| Learning & Growth Perspective | Developmental level | Assessing extent of OHSMS development<br>Meeting system specifications<br>Continuous Improvement | Verification audit & PPI data<br>Verification audit<br>Validation audit & PPI data. |

A balanced scorecard approach to OHSMS evaluation would be applied through strategic planning and consultative processes within organisations. This is not a data collection exercise: rather it is a systematic framework for planning and resource allocation which requires the use of data to understand and accommodate stakeholder interests, monitor the efficiency of internal processes, and project actions to fit the developmental process of implementing a successful OHSMS.

# 8. CONCLUSION

This Report has reviewed research evidence and expert opinion in Australia upon the effectiveness of OHSMS. The need for such a review stems from the apparent growth in the number of organisations using OHSMS accompanied by criticism of the real value of audit based models and of their adverse side effects upon independent employee OHS representation. In this context, we have examined four questions concerning the effectiveness of OHSMS, constraints on their performance, lessons from Quality Management, and reliable measures to evaluate OHS and OHSMS performance. In this conclusion we first summarise our findings on these four questions, and second, offer suggestions for new directions in research and policy.

## 8.1 How Effective are OHSMS in Delivering OHS Outcomes?

Before tackling this question directly, the Report looked at the problem of defining OHSMS. While a broad definition is favoured, encompassing both the rudimentary systems suited to small business and the complex systems of larger organisations, it was noted that this approach accepts that OHSMS will take diverse forms which need different evaluative methods. In particular, evaluation methods need to take account of the following:

- Method of establishment (voluntary or mandatory).
- Principle OHS control strategy (safe person/safe place).
- Management structure and style (innovative or traditional).
- Level of system development (meeting basic specifications or stakeholder needs).
- Degree of implementation (introductory or fully operational).

While all systems ultimately seek to reduce incidents and claims, the processes by which they do so may differ thus necessitating multiple yardsticks of the systems themselves. For example, positive performance indicators appropriate to a fully functional continuous improvement OHSMS will not be found in a new and partially implemented system which is better assessed against project management targets.

This problem exacerbates other difficulties in evaluating OHSMS effectiveness such as the lack of large scale research undertaken directly on this question. Consequently our conclusions in evaluating OHSMS effectiveness must be tentative. Our findings are as follows:

1) Most experts offer conditional support for their effectiveness although a number are dismissive.

2) Research does exist to indirectly validate OHSMS effectiveness, although many of the studies were conducted overseas, and their findings may be non-transferable.

3) The conditional effectiveness of OHSMS is further supported by Gallagher (2000) who compares the effectiveness of different types of system in Australia. Those systems with innovative management structure and style, and principally reliant on a safe place control strategy, were found to be the most effective on several objective OHS and OHSMS performance measures.

4) The literature and consultations support the view that OHSMS effectiveness depends upon senior management commitment, effective employee consultation, and OHSMS integration into general management systems.

## 8.2 Barriers to OHSMS Success

Three types of barrier to OHSMS success were distinguished.

First are those barriers which arise from a failure to recognise and act on the necessary conditions for OHSMS to succeed. These might be called 'system design faults'. They include:

- Failure to customise systems to organisational needs.
- Imposition without employee consultation.
- Weak management commitment, organisation and resourcing.
- Lack of integration with general management functions and systems.
- Restricting OHS to technical experts and failing to train and involve employees.

A second barrier to effectiveness is the inappropriate use of audit tools which can induce system design faults. The term Audit tool was applied to OHSMS standards and proprietory systems. They have played a significant role in the growing use of OHSMS in Australia and are considered to have a positive impact on OHSMS effectiveness by sensitising organisations to the need for a systematic approach to OHS and, through the documentation process, bringing consistency to the management of OHS. Nevertheless, it was widely claimed that Audit tools can become counter-productive where:

- Compliance with the Audit tool becomes an end in itself rather than a means to improved OHS.
- Audits are linked to external incentives (as opposed to internal organisational goals) and compliance can become tokenistic.
- Inflexible audit criteria are applied out of context rather than customised to meet specific organisational needs.
- The Audit process lacks a sound basis in auditor skills, standards and procedures.
- Audit tools encourage a focus on tangible hazards rather than latent or long-term health risks.
- Audit tools fail to flag conditions for OHSMS success such as senior management commitment and employee involvement in planning, implementation and review.

The view was expressed that these problems may not be inherent in OHSMS auditing and may be correctable.

Third, contextual constraints on OHSMS often exist in particular sections of business or the workforce where implementation encounters special difficulties. Four of these were discussed:

- Small business may require an alternative and simplified 'systematic' management approach because complex OHSMS are impractical.
- Workers in precarious employment such as part-time and casual workers tend to be excluded from the operation of OHSMS and therefore limit their application and effectiveness.

- Contractors can create problems for OHSMS effectiveness relating especially to their interface with large businesses and the diffusion of OHS responsibility.

- Labour-hire companies are considered to pose the most significant constraint on OHSMS operation since they generally compound the problems respectively of small size, precarious employment, and diffuse OHSMS responsibility whilst bringing a 'short-term' perspective to the 'long-term' issue of OHS management.

Information upon these three types of barrier was gained mainly from the expert consultations although some research support exists for these views. Further empirical research is needed to improve our knowledge and understanding of these problems.

## 8.3 Lessons from Quality Management for OHSMS Measurement and Evaluation

The previous sections noted the scarcity of Australian research to evaluate and measure OHSMS performance. Research upon closely related Quality Management practices was therefore reviewed for relevant insights. These programs share many common features with OHSMS. In particular the 'continuous improvement' approach of OHSMS owes much to QM whilst Quality Assurance methods and tools have influenced OHSMS auditing. However, some differences between QM and OHSMS were suggested during the consultations. For example, OHSMS are influenced by mandatory legal requirements relating to employer responsibilities and employee consultation for which there are no counterparts in QM. Our main findings are as follows.

(1) External evaluation. Extensive research shows that QM can deliver positive performance results depending upon effective implementation and adaption to organisational requirements. By extension, similar OHSMS practices are likely to succeed providing proper conditions for success are met.

(2) Internal evaluation. Trends in QM performance measurement may support the refinement and use for OHSMS of multiple performance measures organised into a 'Balanced Scorecard' to reflect various stakeholder perspectives and organisational requirements and including:

    - Refined and relevant conventional 'outcome' statistics (incident or claims data).

    - External benchmarking targets (often industry data).

    - Measures of system or process inputs (PPIs for OHSMS).

    - Motivational devolved measures (KPIs) developed by participatory methods but linked to strategic outcomes.

Evidence was cited demonstrating the growing use in Australia of benchmark and KPI data. There is no research to demonstrate any equivalent extension in the use of PPIs for OHS. However, it is likely that there remains a need for a greater take-up for OHSMS of the kinds of measures already widely accepted for QM interventions.

## 8.4 Measuring OHSMS Performance

The traditional incident/claims data used to measure OHS outcomes are known to encounter accuracy and reliability problems such as under-reporting and skewing towards recorded accidents and away from long term health problems. Nevertheless, most expert consultations argued for the cautious use of and improvement of such data. However, consensus also existed that such measures needed supplementing with additional kinds of

data. This is especially true where the purpose is to evaluate the operation of an OHSMS.

Such supplementary data takes several forms and may serve a number of different purposes. Included here are:

- Positive Performance Indicators (to monitor organisational readiness and OHSMS processes as well as continuous improvement outcomes).
- Industry standards data (to benchmark processes).
- Employee and managerial involvement and feedback, often for motivational purposes.
- Audits (of compliance with system specifications).
- Balanced Scorecard (to link strategy formation to stakeholder interests).

Considerable interest has been generated over recent years in the use of PPIs, industry standards and audits. However, like conventional outcome measures, each of these can encounter objections relating to their interpretation and relevance. One way such difficulties can be resolved is through an integrative framework which clearly specifies the different types of data, their uses, and a process for reconciling or combining them. The Balanced Scorecard can be developed into one such integrative framework. It provides for the combination of several different measures reflecting different stakeholder interests, system processes and levels of system development. Strategic planning and consultation processes constitute organisation specific activities through which the integration of data occurs.

## 8.5 Future Developments

One area for further development is new research. This Report has drawn attention to the absence of research on several aspects of the operation and effectiveness of OHSMS in Australia. These include:

- The incidence of OHSMS (for example, how many workplaces use systems, and what is their distribution by system type, industry, region, and workplace size)?
- What variables impact upon effectiveness, other than senior management commitment, systems integration and employee consultation?
- What is the process by which effective systems become established?
- What type of system or approach to OHS management is most effective in small business?
- Are there conditions under which OHSMS can be developed and operate effectively in labour hire firms and in contracting relations?
- What type of OHSMS or approach to OHS management is most effective in catering for the OHS needs of part-time and casual employees?

The Report has also drawn attention to weaknesses in current approaches to measurement and offered an alternative model. Research is now needed to:

- Develop and validate the Balanced Scorecard approach to effectiveness measurement.

- Develop more reliable statistics on the incidence of injury/disease.

- Evaluate the adequacy of audit tools and processes as a measurement technique.

Four research methods can be applied to the above questions:

1) Large scale survey analysis, including extensions on existing Australian Bureau of Statistics surveys and the Australian Workplace Industrial Relations Survey (see further Morehead et al., 1997).

2) Longitudinal case study research (mapping changes in system effectiveness over time).

3) Multiple case study research (for comparative purposes).

4) Action research to involve workplace parties in the establishment and evaluation of appropriate OHSMS (especially in applying OHSMS to problem situations such as contractors or for development of the Balanced Scorecard).

Given the problems associated with current measurement tools, one suggestion which will assist on-going research upon OHSMS effectiveness is the establishment of measurement protocols prior to the evaluation of organisation OHSMS. For organisations participating in studies of OHSMS effectiveness, this could include development of comparable and agreed process measures, audit criteria and injury/ill-health outcome measures. It could also include agreement on feedback loops to assess incident reporting and recording arrangements, and may be able to address the confounding impact of claims and injury management systems.

A second area for further development is public policy on OHSMS. To date, policy in Australia has favoured a voluntary approach to the spread of OHSMS. The relative merits of voluntary and mandatory models have been discussed extensively elsewhere (Gunningham and Johnstone, 1999). Our findings suggest the need for caution should departure from a voluntary approach be considered. It was strongly argued in our consultations that systems adopted to meet external requirements tended to be deficient. We also found that the conditions for OHSMS effectiveness are demanding, and that many businesses are claimed to fall short. Until business develops a better understanding of these conditions for success, it is likely that mandatory systems or incentives to adopt systems will mainly increase the number of businesses with ineffective OHSMS. There appears to be considerable scope for additional policies to reverse the tainted image of OHSMS evident in the consultations for this Report by promoting the voluntary use of systems tailored to specific organisational needs and built upon the known conditions for success.

# 9. REFERENCES

ACCI (1999) *Small Business Safety Solutions*, Australian Chamber of Commerce and Industry, Melbourne.

ACIRRT (1999) *Australia at Work: Just Managing?*, Prentice-Hall, Sydney.

AMC (1994) *Leading the Way: A Study of Best Manufacturing Practices in Australia and New Zealand*, Australian Manufacturing Council, Melbourne.

Amis, R., & Booth, R. (1992) Monitoring Health and Safety Management, *The Safety and Health Practitioner,* Feb, 43-46.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. (2000) *Manufacturing Advantage: Why High-Performance Work Systems Pay Off*, Cornell University Press, Ethica.

Aronsson, G. (1999) Contingent Workers and Health and Safety, *Work, Employment and Society,* 13 (3), 439-459.

Becker, B., & Gerhart, B. (1996) The Impact of Human Resource Management on Organizational Performance: Progress and Prospects, *The Academy of Management Journal,* 39 (4), 779-801.

Berg, P., Appelbaum, E., Bailey, T., & Kalleberg, A. (1995) The Performance Effects of Modular Production in the Apparel Industry, *Industrial Relations,* 35 (3), 356-374.

Berger, Y. (1999) Why Hasn't it Changed on the Shopfloor?, in C. Mayhew & C. L. Peterson
(Eds.) *Occupational Health and Safety in Australia*, Allen & Unwin, Sydney.

Blewitt, V., & Shaw, A. (1995) Integrating OHS through self-managed work teams, *Journal of Occupational Health & Safety - Australia and New Zealand,* 11 (1), 15-19.

Boden, L. I., Hall, J. A., Levenstein, C., & Punnett, L. (1984) The Impact of Health and Safety Committees, *Journal of Occcupational Medicine,* 26, 829-834.

Bohle, P., & Quinlan, M. (2000) *Managing Occupational Health and Safety: A Multidisciplinary Approach*, (2nd ed.) MacMillan Publishers, Melbourne.

Bottomley, B. (1994) *Positive Performance Indicators in OHS - The Victorian Occupational Health and Safety Authority's SafetyMAP System,* Paper presented at the Making the APS Count in the 1990s Workshop, Sydney, December.

Bottomley, B. (1999a) *Occupational Health and Safety Management Systems: Information Paper,* National Occupational Health & Safety Commission, Sydney.

Bottomley, B. (1999b) *Occupational Health and Safety Management Systems: Strategic Issues Report*, National Occupational Health & Safety Commission, Sydney.

Brown, A., & Wiele, T. (1995) Industry Experience with ISO 9000, *Asia Pacific Journal of Quality Management,* 4 (2), 8-17.

Burgess, J., & Campbell, I. (1998) The Nature and Dimensions of Precarious Employment in Australia, *Labour & Industry,* 8 (3), 5-22.

Callus, R., Morehead, A., Cully, M., & Buchanan, J. (1991) *Industrial Relations at Work*, AGPS, Canberra.

Caple, D. (1996) *Identification of the most effective methods for disseminating known solutions across industries*, Report to WorkSafe Australia, June, Sydney.

Chew, D. (1988) Effective Occupational Safety Activities: Findings in Three Asian Developing Countries, *International Labour Review,* 127, 111-125.

Cohen, A., Smith, B., & Cohen, A. (1975) *Safety Program Practices in High vs Low Accident Rate Companies - An Interim Report,* National Institute of Occupational Safety and Health, Publication No 75-185, Cincinatti.

Cohen, H., & Cleveland, R. (1983) Safety Program Practices in Record-Holding Plants, *Professional Safety,* March, 26-32.

Costello, M., & Merrett, P. (2000) *Building your own OH&S Management System - WorkCover's D-I-Y Kit,* Paper presented at the First National Occupational Health & Safety Management Systems Conference, University of Western Sydney, Sydney.

Coyle, J., & Leopold, J. (1981) Health and Safety Committees - How Effective Are They?, *Occupational Safety and Health,* November, 20-22.

Dalrymple, H., & Redinger, C. (1998) *Occupational Health and Safety Management Systems: Review and Analysis of International, National and Regional Systems and Proposal for a New International Document,* Report prepared for the International Occupational Hygiene Association.

Dawson, P. (1996) *Technology and Quality: Change in the Workplace*, International Thomson Business Press, London.

Dawson, D. & Brooks, B. (1999) *Report of the Longford Royal Commission: The Esso Longford Gas Plant Explosion,* Government Printer for the State of Victoria, Melbourne.

Dawson, S., Willman, P., Bamford, M., & Clinton, A. (1988) *Safety at Work: The Limits of Self-Regulation*, Cambridge University Press, Cambridge.

Dell, G. (2000) *Current Safety Management Practice: Does a Systematic Approach Deliver?,* Paper presented at the First National Conference on Occupational Health and Safety Management Systems, UWS, Sydney.

Dertouzos, M. L., Lester, R. K., & Solow, R. M. (1989) *Made In America*, Harper Perennial, New York.

Divisions of Workplace Health & Safety (1994) *Workers' Compensation Data: A Poor Indicator of Workplace Injury and Disease,* Department of Employment, Vocational Education, Training and Industrial Relations, July, Brisbane.

Doucouliagos, C., & Sgro, P. (2000) *Enterprise Return on a Training Investment*, Unpublished manuscript, Deakin University, Melbourne.

Dunphy, D., & Stace, D. (1990) *Under New Management: Australian Organisations in Transition*, McGraw Hill, Sydney.

Eakin, J. (1992) Leaving it up to the Workers: Sociological Perspectives on the Management of Health and Safety in Small Workplaces, *International Journal of Health Services,* 22 (4), 689-704.

Eakin, J., Lamm, F., & Limborg, H. (2000) International Perspective on the Promotion of Health and Safety in Small Workplaces, in K. Frick & P. Jensen & M. Quinlan & T.

Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Edwards, P., & Wright, M. (1999) *High Involvement Work Systems and Performance Outcomes: The Strength of Variable, Contingent and Context-bound Relationships*, Unpublished manuscript, Industrial Relations Research Unit, Warwick University.

Eisner, H., & Leger, J. (1988) The International Safety Rating System in South African Mining, *Journal of Occupational Accidents,* 10, 141-160.

Else, D. (1994) *Integrating Occupational Health and Safety into Tomorrow's Learning Organisation,* Paper presented at the Belts to Bytes Conference, Workcover, Adelaide.

Ergas, H., & Wright, M. (1994) *Internationalisation, Firm Conduct and Productivity,* Paper presented at the Conference on the International Integration of the Australian Economy, Kennedy School of Government/Trade Practices Commission & Reserve Bank of Australia.

Eyssen, G., Hoffman, J., & Spengler, R. (1980) Managers' Attitudes and the Occurrence of Accidents in a Telephone Company, *Journal of Occupational Accidents,* 2, 291-304.

Francois, M., & Lievin, D. (1995) *Emplois Precaires et Accidentabilite: Enquete Statistique Dans 85 Entreprises*, Unpublished manuscript, Institut National de Recherche et de Securite, Paris.

Frenkel, S. (1989) Productivity Growth: Towards a Sociological Synthesis, *Labour & Industry,* 2 (1), 5-31.

Frick, K., Jensen, P., Quinlan, M., & Wilthagen, T. (2000) Systematic Occupational Health and Safety Management - An Introduction to a New Strategy for Occupational Safety, Health and Well-being, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Frick, K., & Wren, J. (2000) Reviewing Occupational Health and Safety Management - Multiple Roots, Diverse Perspectives and Ambiguous Outcomes, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Gallagher, C. (1994) *Occupational Health and Safety Management Systems: Links with Performance,* Paper presented at the Belts to Bytes, WorkCover, Adelaide.

Gallagher, C. (1997) *Health and Safety Management Systems: An Analysis of System Types and Effectiveness,* National Key Centre in Industrial Relations, Monash University, Melbourne.

Gallagher, C. (2000). *Occupational Health & Safety Management Systems: System Types and Effectiveness,* Unpublished Ph.D., Deakin University, Melbourne.

Green, R. (1993) Analysis and Measurement of Productivity at the Workplace, *Labour & Industry,* 5 (1&2), 1-15.

Green, R. (1994) A Positive Role for OHS in Performance Measurement, in WorkSafe-Australia (Ed.) *Positive Performance Indicators: Beyond Lost Time Injuries*, AGPS, Canberra.

Guastello, S. (1991) Some further evaluations of the International Safety Rating System, *Safety Science,* 14, 253-259.

Guest, D. (1997) Human resource management and performance: a review and research agenda, *International Journal of Human Resource Management,* 8 (3), 263-276.

Gunningham, N. (1996) From Compliance to Best Practice in OHS: The Roles of Specification, Performance and Systems-based Standards, *Australian Journal of Labour Law,* 9 (3), 221-246.

Gunningham, N. (1999) *CEO and Supervisor Drivers: Review of Literature and Current Practice*, Report for the National Occupational Health & Safety Commission, October, Sydney.

Gunningham, N., & Johnstone, R. (1999) *Regulating Workplace Safety: System and Sanctions*, Oxford University Press, Oxford.

Health and Safety Executive (1991) *Successful Health and Safety Management*, HMSO, London.

Hopkins, A. (1994) Are Workers' Compensation Statistics a Health and Safety Hazard?, *Australian Journal of Public Administration,* 53 (1), 78-86.

Hopkins, A. (1995) *Making Safety Work*, Allen & Unwin, Sydney.

Hopkins, A. (2000) *Lessons from Longford: The Esso Gas Plant Explosion*, CCH Australia Limited, Sydney.

Hovden, J., & Tinmannsvik, R. (1990) Internal Control: A Strategy for Occupational Safety and Health: Experiences from Norway, *Journal of Occupational Accidents,* 12, 21-30.

Huselid, M. (1995) The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance, *Academy of Management Journal,* 38 (3), 635-672.

Ichniowski, C., Kochan, T., Levine, D., Olson, C., & Strauss, G. (1996) What Works as Work, *Industrial Relations,* 35 (3), 299-333.

Ichniowski, C., Shaw, K., & Prennushi, G. (1997) The Impact of Human Resource Practices on Productivity, *American Economic Review,* 87 (3), 291-313.

Isaksson, K., Hogstedt, C., Eriksson, C., & Theorell, T. (Eds.) (2000) *Health Effects of the New Labour Market*, Kluwer Academic, New York.

James, C. (1993) Social Processes of Reporting or Non-reporting, in M. Quinlan (Ed.) *Work and Health*, MacMillan, Melbourne.

Jensen, P. (1998) *'- a genuine success for risk assessment?',* Paper presented at the Policies for Occupational Health and Safety Management Systems and Workplace Change, Amsterdam.

Johnson, T., & Kaplan, R. (1987) *Relevance Lost*, Harvard Business School Press, Boston.

Kamp, A., & Le Blansch, K. (1998) *Integrating Management of OHS and the Environment*, Paper presented to the Policies for Occupational Health and Safety Management Systems and Workplace Change Conference, Amsterdam, 21-24 September.

Kamp, A., & Le Blansch, K. (2000) Integrating Management of OHS and the Environment - Participation, Prevention and Control, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Kaplan, R., & Norton, D. (1996) *The Balanced Scorecard: Translating Strategy into Action*, Harvard Business School Press, Boston.

Kirkpatrick, D. (1987) Evaluation and Training, in R. Craig (Ed.) *Training and Development Handbook*, McGraw-Hill, New York.

Kochan, T., Dyer, L., & Lipsky, D. (1977) *The Effectiveness of Union-Management Safety and Health Committees*, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

Kochan, T., & Osterman, P. (1994) *The Mutual Gains Enterprise*, Harvard Business School Press, Boston.

KPMG (1998) *Impact of the growth of labour hire companies on the apprenticeship system*, Reported prepared for the Australian National Training Authority, ANTA, Brisbane.

Lamm, F. (1999) *Occupational Health and Safety in Australian Small Business: What can be done to reduce the lack of awareness and raise the level of compliance in Australian small business?*, Industrial Relations Research Centre, University of New South Wales, Sydney.

Larsson, T. (1994) *Rational use of the workers' compensation system: Australia at the crossroads,* Paper presented at the Belts to Bytes Conference, WorkCover, Adelaide.

Legge, V., Cant, R., O'Loughlin, K., & Waite, H. (1996) *Issues of Absenteeism and Occupational Health and Safety*, Report to NSW Consultative Committee on Ageing, University of Sydney, Sydney.

Leopold, J., & Beaumont, P. (1982) Joint Health and Safety Committees in the United Kingdom: Participation and Effectiveness - A Conflict?, *Economic and Industrial Democracy,* 3, 263-284.

Lester, R. K. (1998) *The Productive Edge: How U.S. Industries are Pointing the Way to a New Era of Economic Growth*, W.W.Norton & Co, New York.

Lowe, J., Delbridge, R., & Oliver, N. (1997) High-Performance Manufacturing: Evidence from the Automotive Components Industry, *Organization Studies,* 18 (5), 783-798.

Macneil, J., Testi, J., Cupples, J., & Rimmer, M. (1994) *Benchmarking Australia: Linking Enterprises to World Best Practice*, Longman Business, Melbourne.

Marcus, A. (1988) Implementing Externally Induced Innovations: A Comparison of Rule-Bound and Autonomous Approaches, *Academy of Management Journal,* 31 (2), 235-256.

Mathews, J. (1994) *Catching the Wave: Workplace reform in Australia*, Allen & Unwin, Sydney.

Mayhew, C. (1997) *Barriers to Implementation of Known Occupational Health and Safety Solutions in Small Business*, A report on a research project conducted through a

partnership between WorkSafe Australia and the Division of Workplace Health and Safety, Queensland, AGPS, Canberra.

Mayhew, C. (2000) *Occupational Health and Safety Issues for Young Workers in the Fast-food Industry*, AusInfo, Sydney.

Mayhew, C., & Ferris, R. (1998) The impact of the legislative requirement for the completion of workplace health and safety plans on small-scale Queensland builders, *Journal of Occupational Health & Safety - Australia and New Zealand,* 14, 357-362.

Mayhew, C., Quinlan, M., & Bennett, L. (1996) *The Effects of Subcontracting/Outsourcing on Occupational Health and Safety*, Industrial Relations Research Centre, University of New South Wales, Sydney.

McDuffie, J. P. (1995) Human Resource Bundling and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Automobile Industry, *Industrial and Labor Relations Review,* 48 (2), 197-221.

Miller, J. G., DeMeyer, A., & Nakane, J. (1992) *Benchmarking Global Manufacturing: Understanding International Suppliers, Customers, and Competitors*, Business One Irwin, Homewood, Illinois.

Mitchell, R., & Mandryk, J. (1998) *The 1995 Australian Workplace and Industrial Relations Survey (AWIRS 95): An OHS Perspective*, AusInfo, Canberra.

Morehead, A., Steele, M., Alexander, M., Stephen, K., & Duffin, L. (1997) *Changes at Work: The 1995 Australian Workplace Industrial Relations Survey*, Longman, Melbourne.

Nettle, D. (1995) The quality movement in Australia: Past and problems, *Labour & Industry,* 6 (3), 27-49.

Nichols, T., & Marcus, A. (1990) *Empirical Studies of Candidate Leading Indicators of Safety in Nuclear Power Plants: An Expanded View of Human Factors Research* Proceedings of the Human Factors Society 34th Annual Meeting.

Nielsen, K. (2000) Organisation Theories Implicit in Various Approaches to OHS Management, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

NOHSC (1999a) *OHS Performance Measurement in the Construction Industry - Development of Positive Performance Indicators*, AusInfo, Canberra.

NOHSC (1999b) *Report on Evaluation of Contractor Compliance*, AusInfo, Canberra.

Nytro, K., Saksvik, P., & Torvatn, H. (1998) Organizational prerequisites for the implementation of systematic health, environment and safety work in enterprises, *Safety Science,* 30 (297-307).

O'Guin, M. (1991) *The Complete Guide to Activity-Based Costing*, Prentice Hall, New York.

Osterman, P. (1999) *Securing Prosperity - The American Labor Market: How It Has Changed and What to Do about it*, Princeton University Press, Princeton.

OTFE (1997) *Return on Training Investment: Development of Enterprise Frameworks*, Office of Training & Further Education, Melbourne.

Painter, B., & Smith, T. (1986) Benefits of a Participatory Safety and Hazard Management Program in a British Colombia Forestry and Logging Organisation, in O. Brown & H. Hendrick (Eds.) *Human Factors in Organisational Design and Management - II*, Elsevier Science, Amsterdam.

Pasmore, W., & Friedlander, F. (1982) An Action-Research Program for Increasing Employee Involvement in Problem Solving, *Administrative Science Quarterly,* 27, 343-362.

Pearse, W. (2000) *Club Zero: Implementing OHS Management Systems in Small to Medium Fabricated Metal Product Companies,* Paper presented at the First National Conference on Occupational Health and Safety Management Systems, UWS, Sydney.

Pettigrew, A. M. (1990) Longitudinal Field Research on Change: Theory and Practice, *Organization Science,* 1 (3), 267-292.

Pfeffer, J. (1998) *The Human Equation: Building Profits by Putting People First*, Harvard Business School Press, Boston.

Purcell, J. (1999) Best practice and best fit: chimera or cul-de-sac?, *Human Resource Management Journal,* 9 (3), 26-41.

Quinlan, M. (1999) Promoting occupational health and safety management systems: a pathway to success - maybe, *Journal of Occupational Health and Safety - Australia and New Zealand,* 15 (6), 535-541.

Quinlan, M., & Bohle, P. (1991) *Managing Occupational Health and Safety in Australia: A Multidisciplinary Approach*, MacMillan, Melbourne.

Quinlan, M., & Mayhew, C. (2000) Precarious Employment, Work Re-Organisation and the Fracturing of OHS Management, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Rahimi, M. (1995) Merging Strategic Safety, Health and Environment into Total Quality Management, *International Journal of Industrial Ergonomics,* 16 (2), 83-94.

Rasmussen, B., & Jensen, P. (1994) Working Environment Management Systems: Trends, Dilemmas, Problems, in G. Bradley & H. Hendrick (Eds.) *Human Factors in Organizational Design and Management - IV*, Elsevier Science, Amsterdam.

Reilly, B., Paci, P., & Holl, P. (1995) Unions, Safety Committees and Workplace Injuries, *British Journal of Industrial Relations,* 33, 273-288.

Rimmer, M., Macneil, J., Chenhall, R., Langfield-Smith, K., & Watts, L. (1996) *Reinventing Competitiveness: Best Practice in Australia*, Pitman, Melbourne.

Rimmer, M., & Watts, L. (1994) Enterprise Bargaining: The Truth Revealed at Last, *The Economic and Labour Relations Review,* 5 (1), 62-80.

Saksvik, P., & Nytro, K. (1996) Implementation of Internal Control (IC) of Health, Environment and Safety (HES) in Norwegian Enterprises, *Safety Science,* 23 (1), 53-61.

Samson, D. (1999) Management Principles and Profitability, in P. Dawkins & M. Harris & S. King (Eds.) *How Big Business Performs: Private Performance and Public Policy*, Allen & Unwin, Sydney.

Samson, D., & Terziovski, M. (1999) *The Relationship between Total Quality Management Practices and Operational Performance*, Department of Management, Monash University, Working Paper Series 08/99, Melbourne.

Shannon, H., Walters, V., Lewchuk, W., Richardson, S., Moran, L., Haines, T., & Verma, D. (1996) Workplace Organizational Correlates of Lost-Time Accident Rates in Manufacturing, *American Journal of Industrial Medicine,* 29, 258-268.

Shaw, A., & Blewitt, V. (1995) Measuring performance in OHS: using positive performance indicators, *Journal of Occupational Health & Safety - Australia and New Zealand,* 11 (4), 353-358.

Shaw, A., & Blewitt, V. (2000) What Works? The strategies which help to integrate OHS management within business development and the role of the outsider, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Simard, M., & Marchand, A. (1995) A Multilevel Analysis of Organisational Factors Related to the Taking of Safety Initiatives by Work Groups, *Safety Science,* 21, 113-129.

Simonds, R., & Shafai-Sahrai, Y. (1977) Factors Apparently Affecting Injury Frequency in Eleven Matched Pairs of Companies, *Journal of Safety Research,* 9 (3), 120-127.

Smith, M., Cohen, H., Cohen, A., & Cleveland, R. (1978) Characteristics of Successful Safety Programs, *Journal of Safety Research,* 10 (1), 5-15.

Standards Australia (1997) *AS/NZ 4804 Occupational Health and Safety Management Systems - General guidelines on principles, systems and supporting techniques*, Standards Australia, Sydney.

Standards Australia (2000) *AS/NZ 4801 Occupational Health and Safety Management Systems - Specification with guidance for use*, Standards Australia, Sydney.

Underhill, E. (1999) The Victorian Labour Hire Maintenance Workers' Strike of 1997, *The Economic and Labour Relations Review,* 10 (1), 73-91.

Underhill, E., Worland, D., & Fitzpatrick, M. (1997) *Self-Employment in the Victorian Construction Industry: An assessment of its impact on individual workers and the industry,* A Report prepared for the Redundancy Payment Central Fund Limited (Incolink), Melbourne.

Vogel, L. (1999) New turns in the debates on occupational health management systems, *TUTB Newsletter*, (11), 41-43.

Viner, Robinson, Jarman Pty. Ltd. & Victorian Institute of Occupational Safety & Health (1989) *Survey of Occupational Health and Safety Prevention Management Systems in Private Sector Companies*, Department of Labour, Melbourne.

Walker, C. (1998) *Behaviour Based Safety Programs*, Canadian Auto Workers, Toronto.

Walters, D. (1998) Health and Safety Strategies in a Changing Europe, *International Journal of Health Services,* 28 (2), 305-331.

Waring, A. (1996) *Safety Management Systems*, Chapman & Hall, London.

Wokutch, R. E., & VanSandt, C. V. (2000) OHS Management in the United States and Japan: The DuPont and the Toyota Models, in K. Frick & P. Jensen & M. Quinlan & T. Wilthagen (Eds.) *Systematic OHS Management: Perspectives on an International Development*, Elsevier, Amsterdam.

Wood, S., & de Menezes, L. (1998) High Commitment Management in the U.K.: Evidence from the Workplace Industrial Relations Survey, and Employers' Manpower and Skills Practices Survey, *Human Relations,* 51 (4), 485-515.

Wooden, M. (2000) *The Transformation of Australian Industrial Relations*, The Federation Press, Sydney.

WorkCover SA (1999) *Performance Standards for the Safety Achiever Bonus Scheme*, WorkCover Corporation, Adelaide.

WorkCover SA (2000) *SABS Performance Standards - A Safety Achiever Business System*, WorkCover Corporation, Adelaide.

WorkSafe Australia (Ed.) (1994) *Positive Performance Indicators - Beyond Lost Time Injuries*, AGPS, Canberra.

WorkSafe Australia (1995) *OHS: Good For Business*, AGPS, Canberra.

Wright, C. (1994) A Fallible Safety System: Institutionalised Irrationality in the Offshore Oil and Gas Industry, *The Sociological Review,* February, 79-103.

Wright, M., & Edwards, P. (1998) Does Teamworking Work, and if so, Why? A Case Study in the Aluminium Industry, *Economic and Industrial Democracy,* 19 (1), 59-90.

Wright, M. (1998) *Factors Motivating Proactive Health and Safety Management*, Contact Research Report prepared for Entec UK Ltd for the Health and Safety Executive, HMSO, London.

Zohar, D. (1980) Safety Climate in Industrial Organizations: Theoretical and Applied Implications, *Journal of Applied Psychology,* 65, 96-102.

# APPENDIX
## Key OHS Stakeholders and Experts Consulted for this Project

## *ACADEMICS, CONSULTANTS & PROFESSIONAL ASSOCIATIONS*

Mr. Bryan Bottomley, *Bryan Bottomley & Associates*
Ms. Liz Bluff, *University of South Australia*
Mr. David Caple, *Ergonomics Society of Australia*
Mr. Geoff Dell, *Safety Institute of Australia*
Assoc. Prof. Richard *Johnstone, University of Queensland*
Mr. Warwick Pearse*, University of Western Sydney*
Prof. Michael Quinlan, *University of New South Wales*
Ms. Andrea Shaw, *Shaw Idea Pty. Ltd.*

## *EMPLOYER ASSOCIATIONS*

Ms. Anne Bellamy, WA Chamber of Commerce & Industry
Mr. Tim Burrows, Victorian Employer's Chamber of Commerce & Industry
Ms. Sandra Cowell, Australian Industry Group
Mr. David Frith, Business SA
Mr. George Gay, Housing Industry Association
Mr. Dino Ramondetta, Master Builder's Association
Mr. David Shaw, Australian Chamber of Commerce & Industry

## *TRADE UNIONS*

Dr. Yossi Berger, Australian Workers Union
Ms. Cathy Butcher, Victorian Trades Hall Council
Mr. Ian Gavin, Consultant & Labor Council of New South Wales
Mr. Terry Hannan, Public Service Association of New South Wales
Mr. Peter Moylan, Australian Council of Trade Unions

## *GOVERNMENT AGENCIES*

### *Department of Employment, Training & Industrial Relations (Queensland)*

Mr. Steven Campbell
Mr. Peter Harman
Mr. George McHugh

### *Department of Industries & Business (Northern Territory)*

Mr. Neil Watson

### *Department of Workplace Relations, Small Business & Employment (Commonwealth)*

Mr. Peter Southwood-Jones, Workplace Safety & Compensation Policy Unit

***WorkCover, Australian Capital Territory***

Ms. Margaret Kennedy

***WorkCover, New South Wales***

Mr. Michael Costello

***WorkCover Corporation, South Australia***

Ms. Dianna Alder
Mr. Peter Collins
Mr. Ian Furness
Mr. Jim Gaetjens
Mr. Dean Taylor

***Workplace Standards, Tasmania***

Mr. Robert Pearce

***Victorian WorkCover Authority***

Mr. Wayne Williams
Mr. Geoff Cremean

***WorkSafe, Western Australia***

Ms. Gail McGowan
Mr. John Randall.