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Systematic Management of Occupational Health and Safety

Liz Bluff
Researcher, National Research Centre for Occupational Health and Safety
Regulation, Regulatory Institutions Network, Research School of Social Sciences,
Australian National University

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1.   Introduction

There is increasing interest in systematic approaches to the management of occupational health and safety (OHSM), as an organisational strategy for the ongoing prevention of work-related injury, ill health and death. Central to the OHSM strategy is effective risk management[1]; that is, the systematic identification of hazards, assessment and control of risks, evaluation and review of risk control measures to ensure that they are effectively implemented and maintained. In turn, effective risk management requires that responsibility is designated, that those involved are competent and resourced to determine and implement the required preventive measures, that workers are actively involved, and that procedures are documented and repeatable. Thus a systematic approach to OHSM requires the implementation of core structures and processes and action by key players.

Although the management of OHS originated early in the 20th century with the US "Safety First Movement", the current wave of systematic OHSM began in the late 1980s (Frick and Wren, 2000: 21; Hale and Hovden, 1998: 129-131; Nielsen, 2000: 104-108). As some of the technical aspects of OHS became better known, debate turned to why these measures were not implemented, especially in the context of some significant disasters in high risk installations. The latter could not be adequately explained on the basis of technical failure or human error alone. Contemporary OHSM evolved from a concern to address the organisational and management aspects of OHS performance. (For a review of factors shaping the development of the contemporary approach to OHSM see Frick and Wren, 2000: 24-25 and Hale and Hovden, 1998: 132-135).

A crucial influence on the development of OHSM was the OHS regulatory reforms introduced in many industrialised nations in the 1970s and 1980s. In this period, the style and form of OHS regulation in Europe, Canada, Australia and some industrialised nations in Asia has moved from a prescriptive style to a more "self-regulatory" model using a combination of general duties, process-based provisions, performance-based standards and documentation requirements to achieve broad OHS goals (Gunningham and Johnstone, 1999: 23-43 & 2000: 125 -127). The greater emphasis placed on self-regulation requires employers to accept responsibility for protecting OHS but provides less direction about how to do this. On the one hand some of the features of this new style legislation provide a rudimentary framework for managing OHS (as discussed in Section 2). On the other hand, more fully-fledged models of systematic OHSM were developed partly in response to the requirement for self-regulation, in order to provide a more detailed framework of structures and processes for discharging OHS responsibilities (as discussed further in Section 4).

In turn some OHS regulators have introduced, or are examining the case for developing, a new form of OHS regulation which mandates and facilitates the adoption of organisational OHS management systems (discussed further in Section 2). With reference to the question of how the law can influence the internal self-regulation of organisations, in order to make them more responsive to OHS, Gunningham and Johnstone (2000: 126) suggest that:

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[1] The expression "risk assessment" is sometimes used. In this paper the expression "risk management" is used to convey the intention to refer to all four stages in the systematic process of hazard identification, risk assessment, risk control, evaluation and review of control measures.

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It is in this context that OHS management systems have the greatest potential to engage with, and offer solutions to, a number of the major problems confronting OHS policy today. That is, acknowledging the increasing limitations of direct regulation, it is argued that law has the potential instead, to stimulate modes of self-organisation within firms in such a way as to make them self-reflective and to encourage internal self-critical reflection about their OHS performance.

If this is the goal of systematic OHSM, how equipped is this strategy to meet the challenge? This is the central question explored in this paper. The paper begins with a discussion of recent developments in systematic OHSM with reference to OHSM as a regulatory strategy, the systems developed by some larger corporations, proprietary OHSM products, as well as initiatives in standardisation and certification of OHSM systems (discussed further in Sections 2 and 3). The core elements of systematic OHSM (as advocated in various corporate and proprietary systems and standards) are introduced in Section 4, and the concept of a "system" is discussed. The paper then looks more critically at some of the preconditions for successful implementation of the core elements of OHSM in Section 5, as well as some internal organisational factors and external influences that shape OHS performance but are not generally addressed in OHSM standards, guidelines and products (Section 6). The challenges to OHSM presented by the increasing trend to precarious employment and the growth in small business are canvassed in Section 7. Research evidence on the effectiveness of the OHSM strategy is reviewed in Section 8 before returning to a discussion of whether, and if so how, OHSM might be pursued in OHS regulation in Section 9.

2. OHSM and OHS Law

While much of the action taken by organisations to manage OHS is voluntary, in some countries systematic OHSM is mandated under OHS law. In the Asian region, one example is Korea's *Industrial Safety and Health Act, 1990* (ISHA) which requires employers to assign a manager to be responsible for OHS and to establish an "industrial accident prevention plan", including development of OHS procedures, OHS education, inspection and improvement of the work environment, investigation of accidents, health surveillance and incident reporting (ISHA: articles 13 and 20). In Singapore, the *Factories (Amendment) Act, 1999* (s 71B) establishes that the occupier of certain classes or types of factory may be required to implement a "safety management system" and appoint approved auditors to audit the system.

In the United States there are several regulatory initiatives in OHSM including the federal "Voluntary Protection Program" (VPP) and state-based Cooperative Compliance Programs. The VPP, introduced by the federal Occupational Safety and Health Administration (OSHA) in 1982, offers companies with exemplary OHS records the opportunity for exemption from routine, programmed OSHA inspections if they implement an OHS program. Based on early experience with VPP, OSHA identified some elements considered necessary for successful OHS programs including management commitment, employee participation, worksite analysis to assess hazards, hazard prevention and control, and OHS training. These became the basis for OSHA's VPP guidelines to assist interested employers in developing OHS programs (Needleman, 2000: 75; OSHA, 1989).

In the US state of California the *Occupational Safety and Health Act, 1973* (as amended in 1991), requires every employer to establish a written "Injury and Illness Prevention Program" (Cal/OSHA, 2002). Following the Californian experience, 21 of the 50 US states have implemented some form of cooperative compliance program in which selected firms implement OHS programs, with support and oversight by State Plan OSHA agencies. The firms are not subject to traditional inspection, citation or assessment for penalties except in response to worker complaints. Some of the state-based schemes involve exemplary performers but others, such as the "Maine 200 Program" introduced by Maine OSHA in 1993, involve firms with the state's highest levels of injuries (Needleman, 2000: 77; Mendeloff, 1996).

Influenced by the voluntary and cooperative OHS programs, a federal OSHA proposal to establish a "Safety and Health Program Rule" is now under consideration (OSHA, 2003a). If successful this would mandate OHSM requiring management commitment to OHS; assignment of responsibilities; OHS procedures; OHS communication mechanisms; hazard identification, prevention and control; accident investigation; OHS training; documentation and evaluation of program effectiveness (Needleman, 2000: 75; OSHA, 2003). However, a key sticking point to the passage of this standard is the central requirement of OHSM that management ensure assessment of hazards and take preventive action which is regarded as removing an existing legal defence in the US, that of not knowing the hazard exists (Needleman, 2000: 81-82).

The legislative initiative regarded as the most significant example of internationally applied provisions on systematic OHSM is the European Union *Framework Directive* on "measures to encourage the improvement of safety and health of workers at work" (European Commission, 1989; Walters and Jensen, 2000: 88; Walters, 2002). The *Framework Directive* contains general principles and processes for the management of OHS, which apply to all public and private sector organisations. Each employer has a duty to ensure the OHS of workers in all aspects of work and must provide the necessary organisation and means to achieve this (Article 5). A prevention policy is to be developed covering technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment. Emphasis is placed on the prevention and minimisation of risks by risk avoidance, control of risk at source, adapting work to the individual, replacing the dangerous with the less or non-dangerous, and giving collective protective measures priority over individual protective measures (Article 6). The key OHSM processes to be implemented by employers under the *Framework Directive* include: the integration of preventive measures into all activities of the organisation; appointment of competent persons to carry out OHS activities; evaluation of risks and implementation of preventive measures; consultation with workers and their representatives; provision of instruction and training; health surveillance; arrangements for first aid and emergency response; and maintenance of certain documentation such as risk assessment and incident reports (Articles 6 to 14).

While the *Framework Directive* is an important legislative initiative, incorporating some core processes of systematic OHSM, it has no legal force until transposed into the national law of member states of the European Union. Member states have taken, and have been allowed to take, considerable leeway in the transposition of the Directive into their national law (Walters and Jensen, 2000: 93-97; Walters, 2002). National differences in interpretation, regulatory infrastructure and style, and the influences of social partner (employer and union organisations) have given rise to

different requirements in relation to risk assessment, involvement of workers and their representatives, and the treatment of OHS expertise.

In Sweden and Norway[2] OHS legislation goes a step further than the *Framework Directive* requiring "internal control" which is a more detailed form of OHSM. The Norwegian regulation applies to all workplaces and follows earlier requirements for systematic OHS action in the offshore oil industry (Lindøe and Hansen, 2000). All employers are required to implement a preventive safety, health and environment (SHE) system which involves systematic actions to ensure that internal control is planned, organised, executed and maintained in accordance with OHS and environment law (Nytrø, Saksvik and Torvatn, 1998; Saksvik, Torvatn and Nytrø, 2003). In effect the internal control regulation establishes a requirement for systematic action to ensure and document activities to implement existing requirements of Norwegian OHS law, the most important of which is the *Working Environment Act, 1977*. The latter includes management of chemical, physical and psychosocial hazards, as well as worker development, job enrichment and on-the-job learning. The regulation, introduced in 1992 and amended in 1997 to reduce concerns about too much documentation, is one of the few OHSM regimes for which there is research to evaluate its implementation and impact. (This research is discussed further in Section 8).

The second Nordic country to issue provisions on "Systematic Work Environment Management" is Sweden which requires employers (including labour hire firms) to include systematic OHSM as a natural part of day-to-day activities with consideration of physical, psychological and social aspects of the work environment (Swedish Work Environment Authority, 2001). There are requirements relating to: OHS policy and procedures; participation of workers and their OHS representatives; designation of responsibility for OHS amongst managers, supervisors and other employees; development of OHS knowledge; risk assessment; investigation of incidents; development of an action plan; follow up of OHS management; and engaging OHS expertise.

In Australia, the employer's duty of care under the OHS statutes[3] typically requires the employer to ensure the OHS of employees with attention to the work environment, systems of work, plant and substances. The employer must provide information, instruction, training and supervision; monitor the health and welfare of employees; and keep information and records relating to work-related injuries. There are also provisions relating to consultation with workers (see Johnstone, 1997: 165-235 for a discussion of the employer's duty of care under Australian OHS law). In addition, Australian OHS regulations generally require risk management, either in relation to specific hazards or as a generic requirement to implement risk management processes. For example, since 1995 the South Australian *Occupational Health, Safety and Welfare Regulations* (OHSWR (SA): 1.3.2 & 1.3.3) have required employers to identify hazards, assess and control risks and a similar approach was adopted under the New South Wales *Occupational Health and Safety Regulation 2001* (OHSR (NSW): r 9-12). In Queensland there is a statutory requirement to implement risk management processes under the *Workplace Health and Safety Act 1995* (s 22(2)).

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[2] Norway is not a member of the European Union.
[3] There are 10 of these covering the six states, two territories and two Commonwealth jurisdictions (general government employees and maritime workers).

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The Australian OHS statutes and/or regulations also require arrangements for health surveillance, first aid, medical care, rescue and evacuation of workers. Arguably, Australian OHS law provides some elements towards a framework for managing OHS. However, it is not generally regarded as a comprehensive and systematic approach as the latter implies a planned and organised approach to managing OHS along with other business functions (discussed further in Sections 4 and 5).

In summary, OHS law in some countries requires the implementation of systematic structures and processes to manage OHS, or the implementation of these arrangements may be a pre-condition for exemption from routine enforcement (as applied in the US). The principles embodied in OHS law vary between jurisdictions and also generally fall short of a fully-fledged OHS management system. A more detailed approach to OHSM is taken by some corporate OHSM systems, proprietary products for managing OHS, and initiatives to standardise OHSM through various national and international standards or guidelines. These more detailed models of OHSM are discussed further below.

3.   Corporate Systems, Proprietary Products, OHSM Standards and Certification

In addition to mandatory requirements to establish certain OHSM structures and processes under the OHS law of some countries, there are many voluntary initiatives undertaken by private sector and government organisations. Some organisations, especially larger ones, have developed their own corporate OHSM systems (see for example Hudson, 2000: 3-31 for a discussion of OHSM at Shell; Dupont, 2003 and Wokutch and VanSandt, 2000 for an outline of Dupont and Toyota's approaches to OHSM). Proprietary products have also been developed and marketed including Det Norske Veritas' (DNV, 1997a) "International Safety Rating System", the National Safety Council's (NSCA, 2000) "5 Star Rating System" and the "SHE Professional System" (Australian Workplace Software, 2003).

Government OHS authorities also provide models and guidance on OHSM. Examples are the UK Health and Safety Executive (HSE, 1997) guide to "Successful Health and Safety Management" and the US guidelines for the "Voluntary Protection Program" (Needleman, 2000: 74-75; OSHA, 1989 and 2003b). In Australia there are various examples including "SafetyMAP" (Victorian WorkCover Authority, 2002), "Safety Achiever Business System" (SA WorkCover Corporation, 2001a), "WorkSafe Plan" (WorkSafe Western Australia, 1999) and "Tri Safe" (Queensland Division of Workplace Health and Safety, 1999). These models and guidelines have been applied by many Australian organisations, especially larger ones. For example, in South Australia, more than 300 larger organisations have implemented the Safety Achiever Business Sytem (SA WorkCover Corporation, 2003). In some instances compliance with particular OHSM standards is a condition of self-insurer status under workers compensation schemes or for achieving a reduction in workers compensation levies. For example, in South Australia and in New South Wales, self-insuring organisations are required to implement systematic OHSM as a condition of self-insurance (see for

example SA WorkCover Corporation, 2001b: 8-9 & 2002; WorkCover Authority of NSW, 2001).[4]

Since the mid-1990s rapid developments have taken place in standardisation of OHSM systems (Zwetsloot, 2000: 391). In 1996 and again in 2000 a proposal was made for the development of an international standard on OHSM, involving the International Standardisation Organisation (ISO). For various reasons (see Zwetsloot, 2000: 396 & 400) this initiative was unsuccessful. Developments on standardisation of OHSM systems then shifted to national standardisation committees. Countries subsequently developing OHSMS standards or guidelines include Australia and New Zealand, the Netherlands, Norway, Spain and the UK (see for example SAA 1997 & 2001; BSI, 1999; & NNI, 1996). Since the failed attempts for an ISO standard on OHSM the International Labour Organisation (ILO) has subsequently published guidelines on OHSM (ILO, 2001).

Along with developments in standardisation of OHSM has come pressure for certification of these systems. Certification is undertaken by private certifying agencies, which internationally include DNV, Lloyds, BVQI and SGS (Zwetsloot, 2000: 396). There are also nationally based certifying agencies. These agencies may use national standards as benchmarks or develop their own criteria. The Joint Accreditation System of Australia and New Zealand (JAS-ANZ) accredits third party providers of OHSM system certification to evaluate OHSM systems against SafetyMAP (Victorian WorkCover Authority, 2002) the Australian Standard 4801 (SAA, 2001) and the British Standard OHSAS 18001 (BSI, 1999) for OHSM system certification.

In summary, there is a proliferation of corporate systems, proprietary products, standards, guidelines and certification tools, as well as some mandatory requirements to apply a systematic approach to OHSM. There is considerable variation between these different initiatives. Some important areas of difference are: (1) the extent to which a particular approach to OHSM aims to address occupational health (including psychosocial) as well as safety risks; (2) whether emphasis is placed on controlling risks, or on changing workers' behaviour; (3) the types of performance measures used (reactive measurement of injuries or monitoring of positive performance indicators; and (4) the extent to which workers are involved and enabled to participate actively in OHSM (Frick and Wren, 2000: 26-27). There are also differences in the extent to which particular models involve pre-prepared packages, such as manuals or software providing policies, procedures and other OHSM elements, as distinct from emphasising the role of the implementing organisation to develop procedures and arrangements to suit its own needs (See also Section 5 for further discussion of different approaches to implementing OHSM).

While recognising that there are different priorities and emphases evident in OHSM, there are nonetheless some core structures and processes that are evident, especially in the various standards and guidelines on OHSM. These common elements provide a

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[4] In the state of South Australia there are some 60 private sector firms implementing OHSM systems as a prerequisite of self-insurance, as well as all public sector and local government organisations. Together with the 300 participants in the Safety Achiever Business System this represents a significant number of organisations implementing OHSM systems on the basis of workers compensation incentives.

broad framework for managing OHS and are outlined in Section 4 below. In that section we also discuss the concept of a "system" for managing OHS, as distinct from the implementation of systematic structures and processes. However, there is not universal agreement either about whether core structures and processes are sufficient or about how they are to be implemented. Some of the different perspectives and sources of diversity in approaches to OHSM are explored further in Sections 5 and 6.

4.   Core Elements of OHSM and the Concept of a "System"

A common theme of the OHSM strategy is that it emphasises *how* OHS is to be addressed by providing systematic structures and processes, rather than specifying *what* hazards are to be addressed or the particular control measures to be implemented (Frick and Wren, 2000: 23). Structural elements are persons (or groups such as committees) with responsibility for OHSM (the "doers"), while process elements are the steps or procedures for taking action (the "doing") (Waring, 1996: 7).

Although there is no standardised understanding of the concept or the practice of OHSM, there is some agreement internationally about core elements of OHSM. In particular, the various OHSM standards and guidelines (as referred to above in Section 3) describe some core elements of systematic OHSM. They outline specific structures, planning activities, responsibilities, processes and procedures, and resources for developing, implementing, evaluating and reviewing OHSM. Table 1 below summarises these elements, drawing on various Australian and overseas standards and guidelines on OHSM (BSI, 1996; EASHW, 2002; HSE, 1997; ILO, 2001; SAA, 1997 & 2002; and Victorian WorkCover Authority, 2002).

The core elements include integration of OHSM into other business activities; management commitment; OHS policy; planning and resourcing of OHSM; designation of responsibility and mechanisms of accountability; policy, procedures and documentation; risk management; worker participation; development of OHS competency; reporting, investigating and correcting deficiencies; and monitoring, auditing and reviewing OHS performance. (Different approaches to implementing these elements are discussed further in Section 5).

Table 1: Core Elements of Systematic OHS Management

Integration

OHSM is integrated into the organisation's other management systems.

Management commitment

Senior management is committed to OHSM.

Organising, planning and resourcing

Plans set OHS objectives, strategies and programs. Financial and human resources for addressing OHS are allocated.

Responsibility and accountability

Responsibilities are identified and allocated to individuals within the organisation, accountability mechanisms are established.

OHS expertise

OHS expertise is established in-house or engaged from external OHS services.

Policy and Procedures

Policy and procedures are established, documented and implemented for key OHS processes, specific types of hazardous work, first aid, treatment and emergency response.

Risk management

Hazards are systematically identified, risks assessed and controlled, and their effectiveness is monitored.

Participation

Workers are involved in OHS.

OHS instruction and training

Managers, supervisors and workers receive OHS training.

Monitoring, reporting, investigating and correcting deficiencies

OHS problems and incidents are identified, reported and investigated and corrective action is taken.

Auditing, review and performance monitoring

Arrangements for managing OHSM are audited, reviewed and improved as necessary. Performance measures are established and there is ongoing monitoring of OHSM performance against these indicators.

Documentation

Structures, planning activities, responsibilities, processes and procedures, resources and action taken to develop, implement, evaluate and review OHSM are documented.

The concept of an OHSM "system"

Ideally, the core structures and processes outlined in Table 1 are not discrete elements. Rather, the intention is that they interconnect and interact in an organised way to create a "system" (Gallagher, 1994; Waring, 1996: 6). Thus, for example, the required OHS competencies are identified for particular personnel on the basis of designated responsibilities; consultation and participation inform risk management decisions; risk management activities inform OHS planning and resourcing decisions; auditing provides feedback about strengths and weaknesses of the OHSM system, as the basis for review and improvement of arrangements. The deliberate linking and sequencing of the different structures and processes of OHS management creates an organised system for managing OHS. Hence the term OHSM system may be used. As Gallagher's (1994: 3-4) research suggests, the greater the linkages between different elements, the more developed the system.

This approach is consistent with General Systems Theory which holds that the most general and fundamental property of a system is the interdependence of its parts or sub-systems (Nielsen, 2000: 103; Waring and Glendon, 1998: 50). A distinction may be made between a systematic procedure or process, which is a set of logically ordered steps for doing something, and a system which consists of a number of interconnected parts or components that interact in an organised way (Waring, 1996: 3&6).

Evolution of OHSM within organisations

Zwetsloot (2000) distinguishes four stages of maturity in organisational OHSM. While these are ideal types and in reality characteristics merge within organisations, conceptualising different stages in OHSM assists in clarifying how organisations may develop from an ad hoc response to OHSM, through a systematic approach, to an organised OHSM system and finally to a proactive and fully integrated system for managing OHS, along with other business functions. The stages identified by Zwetsloot (2000: 392-393) are characterised as follows:

- in the *ad hoc stage* the organisation has little OHSM expertise and reacts to problems as they arise, for example when an accident occurs, with high absenteeism due to sickness, following an inspector's visit or in response to internal disputes on OHS;

- in the *systematic stage* the organisation carries out periodic risk assessment, action planning, prioritising of problems and implementation of planned control measures - in this stage several people in the organisation are developing know-how on OHSM but external OHS expertise may be sought as the organisation is still developing internal OHS competency;

- in the *system stage* the organisation implements and maintains an OHSM system by continuous structural attention to OHS which is organised before the start of new activities - procedures and accountabilities are clear, the focus is on prevention and control, there is periodic auditing and management review of the OHSM system;

- in th*e proactive stage* the organisation integrates OHSM into other management systems such as those for quality and environment, and/or integrates OHSM into its business processes; the focus is on continuous improvement and initiatives for improvement are expected from everyone; direct participation is important in

order to have short and proactive feedback loops; more effort is directed at the design stage of products, processes, workplaces and work organisation, and the associated technological and organisational choices; collective learning is fostered; OHSM is seen as contributing to a positive company image, by the labour market and customers.

Zwetsloot's (2000) four stages in the development of OHSM provide some food for thought about the goals of regulators in encouraging OHS management in organisations. While the *proactive stage* may be the goal of systematic OHSM it is important to recognise that it is achieved after progressive development of OHSM, over time. Setting OHS outcomes in the *systematic* and *system stages* may be more realistic for many organisations and at least achieves the goal of ordered and organised activity on OHS. It is also noteworthy that regulatory models of OHSM such as the European *Framework Directive* and the Norwegian and Swedish regulation focus activity in the *systematic stage*, compared with the more complex corporate and proprietary models, and some OHSM standards which emphasise integration and other features of the *proactive stage*.

In summary, core structures and processes provide a framework for systematic activity to manage OHSM. Ideally, these interact in an organised way, thereby establishing a system for continually improving OHS performance. However, OHSM gradually evolves in an organisation. Thus across a number of organisations managing OHS, a full spectrum of system development might be observed from more ad hoc approaches, to implementation of systematic processes, to fully integrated systems. Indeed, different degrees of development might be more suitable for different organisation, an idea we will return to in Section 9.

5.   Some Different Perspectives on Core Elements of OHSM

As discussed, the various OHS standards, guidelines, corporate and proprietary models provide a set of systematic components (structures and processes), which comprise a framework for managing OHS. While in broad terms there is some agreement about what these core structures and processes should be, there is considerable variation in approaches to their implementation. The core elements do not represent a straightforward formula or recipe for successful management of OHS. On the one hand, while individual elements may seem intuitively to have value, there are debates about each element and how it should be implemented. This section examines each element from a critical perspective, seeking out evidence, first, of a contribution to OHS performance (if this exists) and second, any insights available about conditions for its successful implementation. The discussion also illustrates some of the different perspectives on particular structures and processes of OHSM. The following are each considered in turn: (1) management commitment; (2) planning, organising and responsibility for OHSM; (3) risk management; (4) participation; (5) OHS expertise and OHS competency; (6) policy, procedures and documentation; (7) reporting, investigating and correcting deficiencies; (8) audit, performance monitoring and review; and (9) integration of OHSM.

5.1   Management commitment

Senior management commitment to OHSM and involvement in leading OHSM strategy is regarded as a crucial element of OHSM, but what is meant by this and how is it to be secured? Some early studies of OHSM in organisations identified that better OHS performance was associated with senior management commitment to OHS. For example, Cohen and Cleveland (1983) examined five US firms with exemplary OHS performance. For these organisations commitment was demonstrated by the priority given to OHS in corporate policy and action, the integration of OHS into organisational decision-making, setting of OHS goals, assignment of responsibilities, provision of resources, identification and control of hazards, involvement of employees and evaluation of OHS performance. Thus management commitment is seen to be demonstrated by implementation of other core elements of OHSM. For Gallagher, Underhill and Rimmer (2001: 23), based on interviews with representatives of industry associations, government OHS authorities, OHS specialists and unions in Australia, some different meanings of "management commitment" include the provision of leadership for OHSM, leading by example and providing the necessary resources. As O'Dea and Flin (2003: 19) explain "... the decisions made at senior levels will affect the priorities, attitudes and behaviours of managers and employees lower down the organisational hierarchy, and be a critical driver on the emphasis that front line managers place on the competing values of safety and productivity".

There seems to be a concensus of opinion that "... management commitment amounts to more than a clear expression of this sentiment in policy statements and must be demonstrated by actions" (Bohle and Quinlan, 2000: 505). In Gallagher's case studies of OHSM in 20 Australian organisations, senior management commitment was expressed through senior managers undertaking a variety of OHS activities, including engaging in OHS planning, review, promotional and hazard management activities. Importantly, committed senior managers were drivers of OHS activity, not simply supporting OHS activity driven by OHS personnel (Gallagher, 1997: s 5.4.1).

Moreover, a commitment to OHSM does not just happen. There are various important drivers and influences. Based on interviews with senior managers in 25 Australian companies, Hopkins (1995: 158) found that managers "... are influenced by a variety of motives, among them economic incentives, fear of legal consequences, moral commitment and concern for their own good reputations". Similar motivations were found in a survey of 102 senior directors of British companies asked about their attitudes to OHS and its relationship to corporate reputation (Smallman and John, 2001). Several stages in evolution of corporate attitudes to OHS were observed: (1) "compliance", motivated by a desire to limit costs of legal liability; (2) "enlightened paternalism", motivated by a sense of duty to employees and other stakeholders; and (3) "external competitiveness", which is related to a sense of pride in the organisation. The influence of OHS regulation also emerged in an earlier British survey of 127 corporate risk and finance managers from 350 of the largest UK companies. Asked about why measures to reduce OHS risks were undertaken, the principal reason given was to ensure compliance with OHS statutory requirements and to avoid legal liability (Ashby and Diacon, 1996: 229-243).

It seems that concern about legal consequences, especially the possibility of personal liability, is a more powerful motivator of commitment than the "safety pays" argument used by some OHS authorities (see Hopkins, 1995 & 1999; O'Dea and Flin,

2003; and Wooden and Vandenheuvel, 1999, for a discussion of the flaws in this strategy). A safety pays argument encourages employers to prioritise OHS problems according to potential financial costs and there is a point at which, for a particular organisation, investment in OHS will not have a net return (Ashby and Diacon, 1996; Cutler and James, 1996:755-765; Wooden and Vandenheuvel, 1999: 411-416). Moreover, managers tend to focus on costs of prevention incurred in a short time frame (for example one year) with the result that the costs appear to be a burden. Even in the event of catastrophe, OHS may not pay. Knight and Pretty (1998) investigated the impact of catastrophe on shareholder value in 15 major corporations. While shareholder value initially fell it recovered if management demonstrated an ability to deal with the difficult circumstances in the aftermath.

Fear of legal consequences and other motivating factors, as outlined above, will only come into play if management's attention is drawn to them. Hopkins (1995: 158-171) considers that OHS specialists within organisations have a vital role to play in organising and presenting information to managers about: legal action that could be taken and could involve them personally; identifying illness and injury costs directly attributable to budgets of local managers; comparing OHS performance of individual managers with that of their peers; and linking OHS performance with remuneration or career advancement. These kinds of internal strategies for securing management are consistent with Broberg and Posniak's (2001) thesis that there are many interests and agendas in organisations which do not just exist but are identified (named) and put into context (framed) by some of the organisational actors as an important part of the negotiation of different interests. Thus proponents of OHS issues need to gain access to relevant arenas of decision-making, and ensure that OHS is named and framed as an area of priority (Jensen, 2002: 218). While this might be facilitated by structural changes in the organisation (for example, designation of responsibility to key managers and holding them accountable), ensuring that OHS has a more distinct and visible position in the organisation requires one or more OHS "actors" to engage with political discussions in the organisation and to attend to the possibilities of naming and framing OHS. These actors might be OHS specialists, OHS representatives, line managers or union delegates championing OHS within the organisation.

Finally, it is worth noting that the most widely used sanction for OHS offences, the monetary fine, has limited preventive value. Gunningham and Johnstone (1999: 255-307) argue the case for a wider range of sanctions to sharpen the organisational focus on OHSM and enable courts to make orders requiring reform of defective OHSM systems. They outline some options for court sanctions including: corporate probation and organisational reform orders that require organisational changes in OHSM; court-ordered requirements to investigate and take disciplinary action against those contributing to contraventions; punitive injunctions requiring introduction of OHSM measures; court-ordered adverse publicity to shame those responsible for contraventions; community service orders applying organisational skills and resources to socially useful projects; and dissolution or a corporation or seizure of assets for very serious offences.

A further mechanism is enforceable undertakings, first introduced under the Australian *Trade Practices Act* 1974 (Cth) (s 87B) and now provided for under the Tasmania *Workplace Health and Safety Act* 1995 (s 55a) and the Queensland *Workplace Health and Safety Act* 1995 (ss 42D-42I). This mechanism empowers the regulator to accept a written undertaking by a duty holder, for example committing to

remedying a particular OHS contravention or implementing certain preventive measures. If the regulator considers that the person who gave the undertaking has breached any of its terms, it may apply to the Court for an order directing relevant person to comply with the undertaking, to pay a fine, or imposing another form of penalty. (See Parker, 2003a&b for further discussion of practice and experience applying enforceable undertakings under Australian trade practices law).

In summary, securing management commitment to OHS can be motivated by a range of influences, although a crucial motivator is awareness of the possibility and consequences of legal action. While management commitment is necessary to provide leadership, to ensure resources for OHSM, and to influence the actions of managers and workers more generally, the process of securing senior management commitment may well involve other agents of change to name, frame and negotiate a place for OHS in organisational planning, priority setting and decision-making processes. Reform of sanctions for non-compliance also has the potential to focus attention on the importance of OHSM.

5.2   Planning, organising and responsibility for OHSM

The organisation of OHSM is the process of mobilising and coordinating human, financial and other resources in a systematic way, and ensuring that mechanisms are in place to monitor and control OHS arrangements (Waring, 1996: 83-85). A planned and proactive approach to OHSM offers greater potential to identify and control problems before they give rise to injury or ill health, rather than an ad hoc approach triggered when (serious) problems arise. Planning also enables the capability and resources to be harnessed to address OHS. In Hale and Hovden's (1998: 147-149) review of factors associated with OHS performance, several planning and organising factors were associated positively with OHS performance. These were: setting measurable goals and standards; securing financial resources; human resources planning; good coordination and centralisation of OHS control. An order-seeking approach to management was also important, as distinct from a damage limiting one. It is not simply the practice of planning and organising that is important but the quality of these activities. In her case studies of OHSM in 20 Australian organisations, Gallagher (1997: s 6.1) found that the quality of OHSM activity was marked by the depth of planning and development in relation to specific projects, the operation of mechanisms to ensure OHSM action is reliable and developed methods of OHS problem-solving.

The nature and extent of planning may vary from strategic planning processes that set goals and strategies to be achieved over time, to shorter term, specific action plans that set out what is to be done, by whom and when. Both types of plans have a role in OHSM although full-blown strategic planning is more likely to be a feature of larger organisations with formal planning processes whereas action plans are a practical tool for all organisations to keep track of action required and taken on OHSM (Waring, 1996: 84-85 & 98-101). Moreover, planning is not only about what is to be done but also who will ensure it is accomplished. In OHSM, the elements of responsibility and accountability are concerned with identifying and allocating to individuals in the organisation specific roles and responsibilities in OHSM and establishing mechanisms to hold these people accountable. While action plans should identify who will implement specific actions, more generally OHSM arrangements may involve the

definition of OHS responsibilities applicable to specific positions or roles in the organisation. To be effective, support and authority to act are also required.

In OHSM it is useful to distinguish "legal responsibility", which cannot be delegated, and "designated responsibility". Where the nature of a person's relationship to another gives rise to a duty of care, the duty is "non-delegable" (see *Kondis v State Transport Authority* [1986] 154 CLR 672 at 686, 55 ALR 42; *Burnie Port Authority v General Jones Pty Ltd* [1994] 179 CLR 520, 120 ALR 42; *R v Associated Octel Co Ltd* [1996] All ER 846; *R v Gateway Foodmarkets Ltd* [1997] 3 All ER 78; Deutz Australia Pty Ltd v Skilled Engineering Ltd [2001] 162 FLR 173, VSC 194; Slate v WorkCover [2002] SA WLT 27 (14 March 2002)).

In contrast to a legal duty of care which cannot be delegated, "designated responsibility" refers to responsibility for specific tasks or actions, assigned to persons within an organisation in order to ensure that OHS matters are addressed. "Accountability" is then an internal mechanism by which a person with responsibility is held to account for performing their OHS role within the organisation. One mechanism for this is to integrate OHS performance measures into performance management agreements so that they are subject to reporting and review as part of an organisation's performance appraisal arrangements. The final and crucial agreement is "authority" which is the formal power within an organisation to make decisions and take action (Waring, 1996: 77).

Various OHSM standards and guidelines (see Section 3) suggest that an organisation's OHS policy is the place to set down OHSM responsibilities of different positions (eg senior managers, line managers, OHS specialists, worker representatives, workers in general). Within the management group different levels of managers may have distinct responsibilities. O'Dea and Flin (2003: 2-3) suggest that:

> Higher-level managers are usually more concerned with strategy i.e. making long-range plans, formulating policy, modifying the organisation's structure, and initiating new ways of doing things. Decisions at this level usually have a long-time perspective. Middle-level managers such as site managers, are primarily concerned with tactics i.e. interpreting and implementing policies and programs, they usually have a moderately long time perspective 1-3 years. Low-level managers such as supervisors and team leaders are primarily concerned with operational matters i.e. structuring, co-ordinating and facilitating work activities. Objectives are more specific, issues are less complex and more focused, and managers typically have a shorter time perspective.

In view of different management roles, responsibilities in OHSM should vary accordingly. In Australia, the National Occupational Health and Safety Commission (NOHSC, 1998) has identified different organisational roles in OHSM and developed competencies according to these roles. For senior managers the emphasis is on establishing, maintaining and evaluating an organisation's OHSM system. For line managers and supervisors responsibilities involve implementing and monitoring policies, procedures and programs. For workers, responsibilities involve following policies and procedures to protect their own OHS and avoiding affecting others (NOHSC, 1998: 6-8).

There is some evidence that organisations with more highly developed OHSM are more likely to ensure that OHS responsibilities are identified and known, including responsibilities set out in health and safety legislation and the role of line managers

and supervisors involvement in health and safety (Gallagher, 1997: ss 4.5, 5.2, 6.1 and 6.2). On the other hand, a limited and reactive role for the supervisor, with limited time, resources and support to address OHS is counter-productive to effective OHSM.

Mechanisms for ensuring accountability are an essential aspect of designating responsibility. This was a weakness identified in Gallagher's (1997) study which found that accountability for OHS was generally lacking. While some organisations included OHS in performance appraisal arrangements, OHS was generally raised in appraisals only in the event of a problem and the focus was more likely to be confined to housekeeping or injury rates rather than performance-oriented OHS objectives (Gallagher et al, 2001: 24).

In summary, a planned and proactive approach to OHSM offers the potential to address OHS problems before they give rise to injury or ill health, and ensures that the capability and resources for OHSM are developed and mobilised. A crucial element is tying down responsibilities for OHSM, commensurate with authority and capacity, and ensuring that accountability mechanisms are in place.

5.3   Risk management

This paper began with the statement that effective risk management is central to the OHSM strategy. After all, the goal of preventing work-related injury, ill-health and death requires action to identify potential sources of harm (hazards) and to prevent or minimise exposure to them (risk control). The risk management process is usually conceived with an intermediate step of risk assessment that involves consideration of the severity and likelihood of harm arising from exposure (see for example Bamber, 1994: 183-195; Cross et al, 2000: 364-371; Waring (1996: 88); Waring and Glendon, 1998: 6). There is also an evaluation and review step to ensure that risk control measures are effective, implemented and maintained. On face value this step-by-step process might seem relatively straightforward. Yet evidence of the failure to implement it or to do so effectively is found in the continuing toll of work-related injury and disease. A key question then is what makes risk management effective in the OHS context?

Hazard identification

One area of weakness arises if the hazard identification phase fails to comprehensively recognise all possible sources of harm. For example, greater attention might be paid to physical hazards that give rise to acute, more obvious, injuries. However, as Bohle and Quinlan (2000: 503) emphasise, "Work organisation, equipment design and other aspects of the physical working environment, administrative practices and social and psychological processes may all interact in a single causal process." In view of this complexity, a systematic and comprehensive approach to identifying factors that may contribute to occupational injury and illness is required. This is consistent with the approach taken by the European Union's *Framework Directive* (see Section 2 above), which requires attention to risks arising from technology, organisation of work, working conditions, social relationships and the working environment.

Comprehensive hazard identification demands both a wider perspective on possible sources of harm as well as methods and techniques that encourage identification of OHS problems that may not be immediately obvious. The traditional approach of a

workplace inspection may allow recognition of problems that can be observed at the time of the inspection. However, a more comprehensive approach would involve consultation with workers (see also Section 5.4), surveys of worker experience, review of published sources and relevant regulatory requirements, analysis of tasks and work roles and work environment monitoring, as well as analysis of incident statistics and investigation reports (see for example Cross et al, 2000: 366-367; Waring and Glendon, 1998: 27). Such an approach is proactive in seeking out potential sources of harm but also takes account of past experience.

Risk assessment and perception of risk

Once hazards are identified, the risk assessment step involves consideration of the nature of the hazards and the severity and likelihood of harm arising from a hazardous event or exposure (Waring and Glendon, 1998: 26). The nature of work performed, how work is organised, the type of plant, equipment and substances used, all influence the nature of hazards encountered. However, it is not only the type of hazards that determine assessment of the degree of risk. Assessment of risk is also influenced by individual and group perceptions of risk, and by the methodology applied, that is, how the assessment is approached.

Jensen (2002: 211) differentiates three constructs of risk as follows:

1. an *expert-based* understanding of risk where risk is conceptualised as the product of the probability of an adverse event occurring and the consequences of this event;

2. a *legal understanding* of risk which is typically established through a political process involving state officials, industry parties and experts which may be a formal process (for example negotiation in tripartite forums) or informal processes (for example lobbying by stakeholders) and in view of the heterogeneous interests of the parties may represent either the view of a dominant group or "an ambiguous formulation of the acceptable level of risk";

3. a *local understanding of risk* which involves a shared understanding developed between the people involved in risk assessment.

Within different arenas for risk assessment there are both different methodologies applied as well as perceptions of risk amongst various "actors". Thus there is diversity in assessment of the significance of particular risks, influenced by the sources of information used to inform assessment and the adequacy of evidence, methodologies for evaluating and measuring risk, perception of the severity of effects or harm, perception of what constitutes appropriate standards for risk control and communication of risk information (Nelkin, 1985: 19; Holmes et al, 1997; Toft, 1996: 99-110; Walters and Frick, 2000: 46-51). Perceptions of risk can also vary significantly amongst different stakeholders. In an Australian study of employer and worker perceptions of risk in a blue collar industry, employers gave a higher rating to risks with an immediate injury effect (emphasising likelihood) whereas workers gave a higher rating to risks with a delayed disease effect (emphasising consequence) (Holmes et al, 1997). Nor are expert-based assessments of risk, typically involving quantification, any more objective. As Toft (1996: 99-110) explains, quantitative risk assessment also involves assumptions that require subjective decisions about information sources used to assess risk and the interpretation of these sources.

Since different understandings and perceptions of risk are a fact of life, it is crucial that workers are involved in risk management decisions. As Walters and Frick (2000: 59) argue, because risk is socially constructed and defined:

> The content of risk assessment needs to be contextualised in terms of uncertainties not only of the risk itself but also of the science and technical knowledge that is applied to its assessment and the social positions of the experts/managers responsible for them. The centrality of the workers' participation – both in the risk assessment itself and in the translation of its results into the practicalities of risk management and hazard abatement – then becomes inevitable".

The need to involve those affected by risk in the workplace is recognised by Danish OHS law which emphasises assessment involving the development of a "local understanding of risk". This is a direct, simple and context-bound explanation of cause-effect relations in a given situation that makes sense to those with the most local experience. It is situation specific but may be generated in part from general knowledge and rules of scientific inquiry (Jensen, 2002: 212). Rather than quantitative calculations of risk or weighing up perceived likelihood and consequences of harm, the Danish workplace assessment process involves identification and description of the type and range of work environment problems, followed by prioritisation of problems, development of an action plan, identification of responsibility, and a timetable for follow-up action (Jensen, 2002: 205). Thus the process is conceptualised as a simple problem solving cycle that provides a mechanism for continuous improvement of OHS (Hale et al, 1997: 130) rather than a more complex, quantitative or semi-quantitative analysis. (Some research on the Danish approach to workplace assessment is discussed in the section below "Danish studies on risk management").

Risk control

The third step in the OHS risk management process is risk control. In broad terms, two approaches to risk control can be distinguished. A "safe place" approach involves designing out or removing hazards at source and controlling any residual risks by engineering, organisational and procedural means. On the other hand a "safe person" prevention strategy focuses on the control of worker behaviour (Gallagher et al, 2001: 13; Haddon, 1980; Hale et al, 1997: 128; Waring, 1996: 75). A safe place strategy is considered more effective as it aims to neutralise the effects of the quirkiness and fallibility of human beings. In contrast, trying to prevent illness and injury by relying on the safe behaviour of individuals is less successful as it requires those individuals to have the knowledge, ability and motivation to act "safely". A variety of factors may render safe behaviour strategies ineffective, including errors and mistakes, stress and fatigue, acting reflexively ("automatic pilot") and human limitations, as well as giving priority to production or operational demands and following a course of action to protect job security (see Sundström-Frisk, 1996 & 1999 for overviews of research on OHS and behavioural change).

A safe place approach is explicit in the European *Framework Directive* which requires prevention and minimisation of risks, control of risks at source and adaptation of work to the individual (Article 6). It is also explicit in the hierarchy of control applied in some Australian OHS regulations (see for example OHSWR (SA): 1.3.3; OHSR (NSW): r 11; and regulations for plant in other Australian jurisdictions).

In addition to giving preference to safe place strategies of risk control, prevention of occupational injury, disease and death also demands that hazards are identified proactively and effectively controlled, rather than reacting to incidents when they occur. This includes identification of hazards and control of risks across the different life cycle phases from procurement, design and planning, construction or manufacture, in commissioning, during start up and operations, in shutdown, in maintenance and cleaning, and in decommissioning or demolition (Hale, 2003: 188; Hale et al, 1997: 128-129). In Hale and Hovden's (1998) review of research studies relevant to OHSM, several aspects of risk management were associated with positive OHS performance. These included inspection and risk assessment but more specifically the application of a problem-solving approach to OHS risks, with attention to different life cycle phases. In Gallagher's (1997) study of OHSM in 20 Australian companies, the organisations with more highly developed OHSM had a prevention strategy focused on the control of hazards at source, through attention at the design stage and a planned and proactive approach to hazard identification, risk assessment and control. They also had well developed purchasing systems whereby risks are assessed in procurement of new plant, substances and other items or services (Gallagher, 1997: ss 4.5, 5.2, 6.1 and 6.2).

Danish studies on risk management

Some Danish studies have shed light on the response to mandatory requirements for risk management. Legislation mandating workplace assessment (WPA) was introduced in Denmark in response to the requirement to implement the 1989 EU *Framework Directive*. The Danish law required that employers establish a participatory process of workplace assessment, rather than an expert-based risk analysis. Firms are free to choose particular methods used but the WPAs must involve:

- a survey of the work environment to identify the type and range of problems;

- description and evaluation of work environment problems;

- prioritisation of problems and an action plan, including a timetable, for solving them; and

- instructions on follow-up activities to the action plan, specifying who has responsibility for follow-up (Jensen, 2002: 205 & 211).

Initial quantitative studies based on telephone interviews or surveys undertaken by Finansministeriat (1998), Rasmussen (1996) and Tofte et al (1998) (as reported by Jensen, 2001 & 2002) suggested that larger firms comply with WPA requirements but smaller ones do not (Jensen, 2002: 205-206). Some of the benefits reported by Tofte et al (1998) include resolution of problems, greater participation in work environment issues and stronger safety organisation. These studies also suggest that limited resources and knowledge are the factors limiting the quality of the WPA performed.

However, a different perspective on the quality of the WPA implementation was gained from qualitative studies involving participants in the WPA process (Jensen, 2001 & 2002). Danish OHS law requires a comprehensive, proactive, safe place and life cycle approach to risk management which provides some criteria for evaluating the quality of WPA (Jensen, 2002: 207-210). These are:

1. the types of issues perceived and dealt with by the parties and coverage of occupational disease, injury, psychosocial, ergonomic and environment (eg indoor climate) aspects;

2. the objectives in developing solutions, eg elimination of risk, reduction of risk, protective equipment or worker instruction;

3. the depth of understanding in the WPA of the multiple and complex causes of work environment problems;

4. the scope of solutions presented reflecting different points of intervention that might be made to prevent work environment problems, with risk avoidance through design and planning; and

5. the ability to transfer work environment issues to relevant organisational actors or units and hold them responsible for handling and actually solving the problem(s).

Contrary to the intentions of Danish law, qualitative research studies found that workplace assessments are mostly concerned with physical risks in relation to occupational disease:

> typical reported problems concerned: ergonomics, heavy lifting, technical aids, use of chemical substances, and missing knowledge and instruction. The remedies were: new equipment, survey and repair of existing equipment, sanitation and substitution of chemical substances in use, revitalising of existing instructions and procedures, and establishing new procedures and courses and seminars on specific subjects. In most cases, the line organisation had taken the responsibility for the problem-solving process, while the safety organisation as a staff organisation had the role of raising the issue and participating in the process (Jensen, 2001: 110).

Moreover, the majority of problems identified (90%) were already well known in the firms. Thus WPA did not bring new issues to the agenda. In organisations less successful with WPA, the activity generated paperwork, such as documenting a survey of work environment problems based on checklists, rather than preventive action (Jensen, 2001: 113). The studies also found that a hierarchy of control is not reflected in the development of solutions. Rather the emphasis is on the parties involved reaching "a shared feeling of satisfaction with the job done". Only one or a few immediate causes of problems tend to be identified (rather than multi-layered causes) and solutions concentrate on resolving problems in existing worksites and work activities rather than solutions involving designers of equipment, workplaces and jobs. While problems are referred for resolution this is typically to a department responsible for technical equipment, for relatively simple repair activities. Even here there are problems in ensuring action by that department (Jensen, 2002: 208-209). Moreover, one of the central elements in a preventive approach, the requirement for WPA strategies to influence the designers of equipment, workplaces, and jobs, was found in only a few cases, even though the designers could be identified within the firm (Jensen, 2001: 113). There were also weaknesses in the ability to establish a participatory process covering all four phases of workplace assessment (survey, evaluation, prioritisation, action planning and follow up). While cooperative procedures are often strong for surveying working conditions, and draw on workers' experience of problems, there are difficulties with the subsequent phases of evaluation, prioritisation and action planning (Jensen, 2002: 210).

The failure to realise the goals of the WPA regulation in Denmark reflects a lack of organisational learning and, in particular, the absence of a local level, mutual understanding of: (1) what issues are considered and experienced as work environment problems (experience element); (2) what factors are considered to be the causes of the problems (theoretical-analytical element); (3) what problems are considered legitimate as work environment problems in a wider context (legal-moral element); and (4) what is understood as the course of action to remedy the problems (action element) (Jensen, 2002: 212-213). In the organisations analysed the local understanding was fragmentary with the result that WPAs focused on relatively few physical aspects of work and tended not to address risk exposures if they were considered integral to a job. Problems were only considered legitimate if derived from specific legislative requirements or if a specific problem hampered the performance of work tasks. The predominant OHS actions were solutions that were within budget limits of the first line manager and where a local taskforce could handle the problem, or problems that could be allocated to a specific organisational department for resolution. Jensen (2002: 216) suggests that organisational learning is required to develop the ability of members of an organisation to develop a local understanding of the work environment, considered pivotal to effective negotiation on workplace assessment. This requires know-how and ability to adjust procedures based on enquiry, reflection and testing out new procedures, as well as structures and procedures that provide "space" and support for collective discussion of experiences (Argyris, 1999; and Argyris and Schön, 1996).

In summary, effective risk management requires proactive, systematic and comprehensive identification of hazards, assessment and control of risks. This does not imply a complex or expert-based risk assessment but rather a practical, problem solving approach in which problems are recognised, prioritised and action to resolve them is planned. Solutions to control risks should emphasise a safe place and life cycle approach, seeking out opportunities to change or design work, processes, equipment, substances and other aspects of the work environment so as to control risks at the source. However, even where OHS law, as in the Danish example, embodies these principles, there is cause for concern about the translation of the aims of the law into practice. This may be because relevant actors in the organisation perform within narrow mental and organisational boundaries, which delimit their activities and responses to OHS problems (Jensen, 2001: 114). Thus developing knowledge, ability and motivation for a more proactive and systematic approach to risk management requires the development of a solid, local understanding of OHS principles, underpinned by organisational learning. Such change requires leadership and support, suggesting a broader role for OHS specialists to facilitate the development of this local understanding and processes for change (see also Section 5.5).

5.4   Participation

Worker involvement in OHSM is included in most OHSM standards, guidelines and proprietary systems, to some extent. However, "involvement" can mean different things and take different forms. There is some concern that some OHSM models do not sufficiently emphasise active worker participation as a crucial element of improving OHS performance (Gallagher et al, 2001: 29; Walters and Frick, 2000: 49-50).

The different forms of worker participation can be understood in terms of who participates, how much participation occurs and why participation is occurring (Walters and Frick, 2000: 50-51). In regard to *who participates*, workers may participate directly in OHS, individually or in groups, or they may participate through OHS representatives, members of joint OHS committees or works councils. Participation can then occur on different levels (*how much participation)*. These levels range from: provision of information to workers after decisions have been made; to consultation before decisions are taken with an opportunity to influence decisions by exchange of views; to delegation of some authority to workers or their representatives; and self-management, based on workers' ownership. The principal forms of participation in OHSM are consultation and delegation of authority, with the latter varying in form and scope.

Why participation occurs depends on whether it is initiated, or accepted, by management, or whether it is imposed by law or agreement. Two distinct rationales can be distinguished: (1) managers need the experience, competence and motivation of workers to detect or abate hazards; or (2) workers need representation to assist in raising and pursuing their OHS interests. In view of these distinct rationales for participation, which are overlaid on differences in national industrial relations settings, there are diverse forms and outcomes of worker participation in OHSM (Bohle and Quinlan, 2000: 434-435; Walters and Frick, 2000: 44). A rationale of drawing on workers experience typically involves methods to inform and educate workers to play a reliable and supportive role in a management driven OHSMS. On the other hand, representational arrangements involve OHS representatives or committees that have some influence over OHS decision-making (Gallagher et al, 2001: 26-27). There are also a myriad of other arrangements for worker involvement including "tool box" meetings, participation in OHS inspection teams, email communications or "chat rooms". As some approaches to OHSM emphasise safe worker behaviour (see Section 5.3 for a discussion of this), some forms of participation involve peer group monitoring of behaviour or incentive schemes to reduce reporting of injuries or illness (Krause, 1997: 29-54; Walters and Frick, 2000: 54).

In some cases, OHS law recognises the industrial relations context of OHSM. For example, the Australian OHS statutes assign elected worker OHS representatives formal functions and powers to facilitate their involvement, to legitimise the participation of workers, and to redress, to some extent, the power relations that exist (see Johnstone, 1997: 433-477 for an overview of these functions and powers). These functions include the right to "investigate", the right to be consulted about changes which might impact upon OHS at the workplace, and the right to initiate the "resolution" of OHS issues including, in most jurisdictions, the power to issue a provisional improvement notice that requires action to remedy an OHS problem.[5] There is also the right to stop unsafe work in some jurisdictions. However, Australian OHS law is less explicit about the involvement of worker representatives in systematic processes such as OHSM planning and organising, risk management, development of OHS training, auditing and other forms of OHS monitoring. In contrast, the European *Framework Directive* "provides a comprehensive mandate for the inclusion of workers and their representatives in all the significant matters it seeks to regulate. In particular, it makes provision for their involvement in risk assessment,

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[5] These are called default notices in South Australia.

the overall prevention plan of the enterprise and in relation to the activities of prevention services" (Walters and Frick, 2000: 44).

The nature and quality of the dialogue of participation is influenced by the powers and intentions of the participants. Under most European OHS legislation, as in Australia, minimum legal rights are established for effective worker representation including: selection of OHS representatives by employees; protection from victimisation and discrimination; paid time off to fulfil the representative function; the right to receive information about current and future hazards; the right to inspect the workplace and to investigate worker complaints; the right to make representations to management; the right to be consulted about OHS arrangements; and the right to accompany OHS inspectors in inspections of the workplace and to make complaints to them when necessary (Johnstone, 1997: 441-477; Walters and Frick, 2000: 46). Two areas covered by European law, are only addressed by some Australian jurisdictions. These are the provision for paid time off to receive training and the right to be consulted about the use of OHS specialists.

Worker participation and cooperation between the working life parties has a strong tradition in the Nordic countries and is reflected in OHS law. The tradition arises from organisational change and development initiatives which focus on the collective participation and involvement, and dialogue between all parties to bring about positive change (Saksvik et al, 2003: 724). Hence the participative approach is a cornerstone of workplace assessment under Danish OHS law (as discussed in Section 5.3) and the participative approaches to OHSM embodied in the Swedish and Norwegian regulations on internal control (see Section 2) (Saksvik et al, 2003; Swedish Work Environment Authority, 2001).

In Hale and Hovden's (1998: 147-148) review of research relevant to OHSM, effective communication and participation were amongst the factors positively associated with OHS performance, with an emphasis on the quality of communication rather than specific channels or forums. Moreover, empowerment of workers and encouraging their contribution to innovation, and a sense of control and autonomy by workers, were also important influences on OHSM success. The evidence on OHS committees was equivocal but their role is more positive where committee membership is balanced and members are trained (Hale and Hovden, 1998: 149&151).

Several studies have found that greater worker autonomy and decentralised decision-making are associated with lower injury rates (Goodman, 1987; Braithwaite, 1985). In particular, studies conducted by Simard and Marchand (1995) in 97 manufacturing plants in Canada suggest that a decentralised approach to management, involving development of supervisor capacity to work participatively with employees, results in greater work group cohesion, and cooperation with the supervisor which in turn are associated with lower injury rates. Thus workplace arrangements impact on OHSM. As Vassie and Lucas (2001) found in a study of 50 UK manufacturing companies, communication of OHS information and participation in OHS were less in organisations using supervised work arrangements, compared with self-managed team environments. Both workers and managers were more involved in OHS, with more open communication, in companies using self-managed teams or structures with team leaders rather than traditional supervisory arrangements. Conversely, high levels of management command and management control over work organisation and task

structure have been shown to reduce worker autonomy and integration, which are in turn associated with higher injury rates (DeMichiei et al, 1982; Dwyer and Raftery, 1991).

There are complementary findings in studies of other employment relations factors. Opportunities for informal contact between managers and workers, more open communication channels and a more humanistic approach to dealing with workers tend to be associated with lower injury rates (Cohen et al, 1975; Cohen and Cleveland, 1983; DeMichiei et al, 1982; Gaertner et al, 1987; Kivimaki et al, 1995; Kozlowski and Doherty, 1989; National Academy of Sciences, 1982; Smith et al, 1978). Communication and interaction between managers and workers serves to demonstrate management concern for OHS and encourages exchange of information and experience about OHS problems and solutions to them.

In Gallagher's (1997) study, the companies with well-developed OHSM systems were also more likely to view worker involvement as critical to OHSM system operation and to have mechanisms in place to give effect to a high level of involvement. She concludes that:

> The research findings have implications for the promotion and operation of health and safety consultative arrangements and broader employee involvement. Until now the promotion of health and safety consultative arrangements has mainly focused on the issue resolution and consultation roles of the health and safety representative, as reflected in health and safety legislation. The findings of this study suggest a more extensive role is a critical factor for success in health and safety management; that is, enterprises will benefit from health and safety representatives moving away from the margins of health and safety management, into more mainstream health and safety management planning, implementation and review (Gallagher, 1997: s 6.2).

In summary, there is evidence to suggest that participation and establishing an effective dialogue between management and workers on OHS issues contributes to improved OHS performance. However, the active, local involvement of workers requires adequate training and information, opportunities to investigate issues and communicate with other workers, and channels for dialogue with management. These conditions for effective worker participation are more likely to be met where there is support within and from outside the workplace (Gallagher, 1994: 3; Walters and Frick, 2000: 45-46 & 48. This support might be provided by committed management, by OHS specialists, by OHS inspectors, unions or by providers of OHS representative training.

It should be noted that some challenges remain in achieving worker participation in practice. One is the enduring problem of communication with and participation by workers from different language and cultural backgrounds (Alcorso, 2002). A second is the increasingly precarious nature of employment with contracting out, use of labour hire workers, casual or short term employment. It is unlikely that the pre-conditions for active participation (information, training and channels for effective dialogue) will extend to these groups. At best it might be possible to extend worker representation to cover these groups so that there is a mechanism at least to assist them in raising OHS issues (see also Section 7 for a discussion of OHSM in small organisations, and OHSM in relation to contractors and other contingent workers).

5.5 OHS expertise and competency

While active senior management involvement is important to provide leadership and to drive OHSM (see Section 5.1 above), OHS "know-how" is nonetheless necessary to support and resource OHSM activities. Access to OHS specialist advisory services and development of OHS competency within an organisation were factors associated positively with OHS performance in Hale and Hovden's (1998: 147-148) review of OHSM studies, as was the status of the OHS adviser, a high status influencing OHS performance more strongly. In Norwegian research, Nytrö et al (1998) surveyed 1184 private and public organisations to investigate what organisational factors predict success in systematic management of health, environment and safety (HES). Amongst this group, of which 82% were small or medium enterprises (SMEs), the strongest predictor of success was whether the organisation had personnel competent in HES and with professional training. These authors conclude that:

> In order to establish novel procedures for systematic HES, the enterprise needs know-how and a certain set of skills to assess work environment conditions and to design effective intervention processes to remedy uncovered OHS problems. The enterprise needs knowledge about rules and regulations and possibly training in dealing with HES-related questions (preferably managers as well as employees) (Nytrö et al, 1998: 299).

Thus OHS competency is a pre-requisite of systematic OHSM. This has two elements: (1) providing OHS expertise in-house or engaging consultant OHS services; and (2) the development of OHS competencies amongst managers, supervisors and workers in the organisation.

In regard to the role of the OHS specialist, several functions are suggested. In a study of OHS assessment in Danish workplaces, Jensen (2001: 111) found that within organisations the OHS manager, a competent safety representative or the OHS unit may act as an information resource centre, and as a "whip" to ensure that line managers and representatives do carry out workplace assessment of OHS problems. In Australia, private consultants have played a key role facilitating the uptake of various government OHSM initiatives (see Section 3 for a summary of these), and in providing advice and information to support implementation (Shaw and Blewett, 2000: 458). From the perspective of external consultant, these authors argue that the role of the OHS specialist is to facilitate the development of a systematic approach to OHSM that suits the culture, environment and risks of the organisation. As an outsider the OHS consultant can offer a "questioning perspective of organisational arrangements", clarifying the parameters within which change is needed, rather than imposing a pre-determined set of policies and procedures (Shaw and Blewett, 2000: 464-473). Walters (2001: 167) also urges OHS specialists to step outside the role of "expert" and:

> to adopt approaches which are at the same time participatory and pragmatic. Their interventions should lead to practical and realistic solutions that are appropriate to specific situations. In reaching them, practitioners should build on local good practice, focus on achievements and encourage the exchange of experience ... This requires new skills amongst practitioners themselves including listening skills, business management expertise, participatory training techniques as well as a willingness to adapt to different situations and shed their traditional expectations concerning their "expert" role.

The role to be played by those with OHS know-how is to facilitate organisational learning and the development of a local understanding of OHS. According to Westerholm, Hasle and Fortuin (2000: 327), the willingness and competence of OHS professionals to assume roles as change agents, based on a relationship of trust, is a crucial determinant of the effectiveness of OHS services. Of particular importance is developing abilities to comprehensively identify the sometimes complex and interacting causes of occupational injury and disease, and an understanding of the principles of prevention (see also Section 5.3 and Jensen, 2003: 212-213).

As well as OHS specialists, those with a role to play in OHSM require training and development to ensure they have the knowledge and skills to fulfil their roles. This includes managers, supervisors, workers and their representatives on OHS issues. One aspect of the responsibilities of employers under OHS law in Australia, Europe, North America and some other nations is the provision of instruction and training (see for example *Framework Directive*: Article 12; Johnstone, 1997: 165-167). However, legal requirements for training often concern the training of workers, with an emphasis on awareness of hazards to be aware of and procedures to follow. Requirements for OHS training may not extend to developing the knowledge and abilities of managers and supervisors in relation to their OHS responsibilities. Worker representatives may have an entitlement to training but this is not automatic (see for example Johnstone, 1997: 456-459).

In Australia, the National Occupational Health and Safety Commission (NOHSC, 1998) has developed OHSM competencies for integration into the vocational and professional education and training of managers and supervisors, as well as workers. The *National Guidelines for Integrating Occupational Health and Safety Competencies Into National Industry Competency Standards* present OHS competencies relevant to the responsibilities of senior managers (to establish, maintain and evaluate OHSM arrangements); for line managers and supervisors (to implement and monitor OHSM policies, procedures and programs); and for workers (to follow policies and procedures). Thus OHS training and development of competencies goes beyond an understanding of relevant legal or technical requirements and encompasses core elements of systematic OHSM. For those leading and supporting OHSM initiatives an understanding of processes of organisational learning is also crucial to develop a dialogue around OHSM and facilitate organisational change (Jensen, 2002: 223; Nytrö et al, 1998: 299; Saksvik et al, 2003: 13).

In the wider literature on education and training some key principles have been established. These include:

- analysis of knowledge, skills and experience required to do a particular job or carry out certain responsibilities effectively;

- identification of training needs on the basis of gaps between current and required knowledge and skills;

- definition of learning objectives or outcomes to be achieved;

- determining learning methodologies most appropriate for achieving the learning outcomes with the particular individuals or groups involved (with reference to adult learning principles);

- evaluation of whether learning outcomes have been accomplished

  (with reference to Baker, 1998: 18.8-18.10; Ellis, 2001: 256-269; Glendon and McKenna, 1995: 12-25; Kolb, 1984).

Comparing workplace training with OHSM against these principles, there are several areas in which weaknesses in OHS education and training can arise. Education principles indicate that OHS education should be tailored to the learning needs of target groups, consistent with their roles and responsibilities, organisational OHSM arrangements and other organisational characteristics. Thus OHS training that is conducted using "off-the-shelf" programs may be less than effective, as it not designed to meet particular needs. Likewise programs are likely to be less effective if they apply traditional "classroom teaching" methodologies, rather than methods more suited to adult, experiential learning within organisations. Moreover, the effectiveness of OHS education in achieving learning outcomes may be poorly assessed, especially if consideration of how evaluation is to be done is left until late in the training process, or after it is completed. In fact, evaluation requires careful consideration during planning to ensure that measures for evaluating learning and other impacts of training are established before training commences. Participants that rely on "evaluation" by participant feedback will, at best, gauge "satisfaction" with the trainer and immediate experience of the training. Ideally, training is evaluated at least on its impact in terms of knowledge, skills and capacities achieved (competencies gained). Other criteria and techniques that might be used are evaluation of the contribution of training to particular projects (competencies applied) and achievement of strategic goals (the contribution of training to organisational performance overall) (Office of Technical and Further Education,1997). Such an approach provides a firmer basis for evaluating the contribution of OHS training and competency development to the OHSM.

In summary, OHS "know-how" is necessary to support and resource OHSM activities. Access to OHS specialist advisory services and development of OHS competency within an organisation are two key, and complementary, strategies for ensuring this "know-how". While larger organisations may have in-house OHS specialists to manage and coordination OHSM arrangements, it is likely that most small and many medium organisations may not have this capacity. For the latter, OHS experience might be engaged from external consultancy services. In the context of improving OHSM, the specialist role is not a purely technical one but rather to facilitate the development and implementation of a systematic approach to OHS, emphasising a participatory approach to ensure that arrangements developed actually suit the organisation. As well as OHS specialists, managers, supervisors, workers and their representatives also require training and development commensurate with their OHS roles. There are well-established principles of adult learning and organisational development which should be applied to optimise individual and organisational learning, and the development of local knowledge and capacity in OHSM.

5.6   Reporting, investigating and correcting deficiencies

While managing OHS systematically demands a proactive approach to recognising and controlling risks, it also important to learn from any adverse incidents that do occur. Thus investigating adverse occurrences and determining contributing factors can provide insights into the management of specific hazards and weaknesses in arrangements for managing OHS, and opportunities to correct deficiencies. From a

learning perspective there is a "search for opportunities for improvement" and equal attention is paid to near-misses as to events where injury or damage is severe (Hale, 1997: 8).

A systematic approach to learning from experience involves comprehensive reporting of incidents, thorough investigation and taking corrective action (Baram, 1997: 164). A well recognised approach to investigation of incidents or adverse events involves examination of multiple causes (the multi-causal approach) (Hale and Glendon, 1987; Waring, 1996: 159). Of particular importance to OHS management, is the analysis of organisational factors contributing to incidents. As Hale (1997: 9) explains:

> When we apply the learning paradigm to organisational learning we are looking at what *all* levels of the organisation can and should learn. Accident investigations have often, in the past stopped at the events close to the incident, which usually concern only the behaviour of the hardware and of the operators/workforce directly concerned with carrying out the activity.

Thus organisational learning from adverse events requires a process of investigation and analysis of contributing factors both further back into the past and further up the chain of management control, exploring how weaknesses in management responsibility, in planning and resourcing of OHS, in risk management processes and action, in procurement practices, in worker involvement, in development of OHS competencies, and so on, contributed to the event or incident. In turn, such a thorough analysis of contributing factors requires information that goes beyond examination of the "scene" and includes interviews and consultation with relevant personnel, as well examination of procedures and records (Della-Giustina, 1996; Vincoli, 1994).

5.7   Policy, procedures and documentation

It may be logical that structures and processes established for OHS be documented as part of the process of ensuring they are communicated, repeatable and can be implemented consistently. Similarly, documentation of planning activities, responsibilities, resources and other action taken to develop, implement, evaluate and review OHSM can help to provide evidence of OHSM development, for example to auditors and regulators. However, an emphasis on documentation of procedures and arrangements has given rise to some concern that an OHSM system may be a "paper tiger" (Frick and Wren, 2000: 21 & 35).

In Hale and Hovden's (1998) review of factors influencing the effectiveness of OHSM, the evidence on documented procedures or "rules" was equivocal. Some studies have found a correlation between OHS performance and rules while others warn against imposing centrally imposed rules (Hale and Hovden, 1998: 149). The authors speculate that this difference might be due to the type of organisation studied or the state of development of its system. In addition, an organisation may have OHS rules but if violations of these are sanctioned this can be associated with poor OHS performance. Haines (1997: 214) suggests a further problem. Reliance on procedures or rules to encapsulate organisational learning has the inherent problem that over time the reason for a procedure can be lost and "observance of form prevails over the pursuit of value." Thus keeping OHS values in perspective, and not just procedures, is crucial to maintaining a proactive approach to OHSM.

It is important to be clear that documentation (in print or a computer program), however comprehensive, is of little value as evidence of OHSM development unless it also reflects meaningful preventive action. Documentation is not in itself evidence of effective OHSM, it is simply part of the management process. (See also Section 5.8 below for a discussion of different sources of evidence for auditing OHSM). Moreover, documentation and computer programs do not need to be complex to be effective, indeed this may be counterproductive. As Torvatn (1997) found, the biggest barrier to implementation of internal control by small and medium organisations in Norway was their perception of internal control as a big and complicated system (Torvatn, 1997; cited by Nytrö et al, 1998: 305). In Norway, the internal control regulations were revised in 1995 to place less emphasis on documentation and more emphasis on preventive OHS action (Nytrö et al, 1998: 305).

In summary, there is a sound rationale for documenting OHSM policy, procedures and preventive action as a logical way of setting down what the organisation does in this area. However, documentation is not evidence of effective OHSM. Effectiveness is contingent on the quality of OHSM activity actually implemented. In turn, involvement in development and ownership by those required to implement policy and procedure, minimising the complexity of these instruments, and keeping OHS values in focus are means to help ensure effective implementation of OHSM.

5.8   Audit, performance monitoring and review

Ideally the evaluation and review of OHSM in an organisation provides a basis for continuous improvement of arrangements. Without some form of monitoring and evaluation of OHSM, there is no basis for determining the effectiveness of arrangements, for addressing weaknesses and for confirming strengths. In general, this involves periodic and regular auditing of the OHS management system, complemented by ongoing monitoring of performance measures, drawing data and information collected from a wide range of sources (Bohle and Quinlan, 2000: 503). For both the ongoing monitoring of performance measures and the periodic auditing of OHSM there are debates about what constitutes effective evaluation of OHSM.

Ongoing performance monitoring

In recent years there has been considerable debate about appropriate and meaningful measures or indicators to enable the ongoing monitoring of OHS performance. Traditionally the lost time injury frequency rate (LTIFR) has been widely used as a measure of OHS performance within organisations. Such data are available at the organisational level if records are maintained of injury and illness occurring. Alternatively, workers compensation claims data might be used. Both sources suffer from several limitations including: (1) under-reporting; (2) the predominance of injuries in such data while occupational illness is relatively unrecognised; (3) there is a tendency not to report or make a workers compensation claim for minor or short term injury and illness, or conditions that don't involve time off work; (4) some groups of workers are excluded from or under-represented in these data sets including self-employed workers, contractors and labour hire workers; (5) this type of data is reactive, reflecting past problems of OHS performance rather than current preventive activity; (6) some high consequence events have a low probability of occurring and the associated risk may be underestimated on the basis of recorded incident rates (Bohle and Quinlan, 2000: 35-44; Hopkins, 1999 & 2000; James, 1993:33-56; Shaw and Blewett, 1995 & 2000: 466). Moreover, if evaluation of OHS performance is

linked to workers compensation experience rating (or bonus penalty) schemes, there may be an incentive for employers to minimise reported claims (Hopkins, 1993: 182). Reduction in injury and claims rates can also be achieved by focusing on injury management and rehabilitation (Gallagher, 1997: s 6.2), or by outsourcing high risk work to contractors or other external parties. Thus, using the reactive indicators of injury or workers compensation claims frequency rates, or severity, is an unreliable approach to performance monitoring as it is difficult to discern whether a downward trend, or non-reporting of certain incidents, is associated with genuine improvements in OHS performance or due to confounding factors.

For this reason, in the OHSM field, there is support for using positive performance indicators (PPIs) to measure OHS performance. It is possible to identify proactive measures of OHS performance which address preventive activities, processes and conditions that prevent occupational injury and disease. Some examples are indicators based on hazard reporting and control action implemented, or achievement of required OHS competencies by managers and workers (see the following for further discussion of PPIs, Glendon and Booth, 1995: 559-565; NOHSC, 1994 & 1999; Shaw and Blewett, 1995: 353-358; Waring, 1996: 148-149). It is crucial that indicators genuinely reflect positive performance, for example the quality of hazard identification and action taken to control risks as distinct from the frequency of workplace inspections, the latter being a process but not informative about preventive action. Reliability of performance monitoring is also crucial, using consistent data collection protocols, survey tools and other methods (Shaw and Blewett, 2000: 467).

While some indicators provide a basis for monitoring overall organisational performance others are more suitable for monitoring operational level performance. A mix of both is appropriate to enable benchmarking of whole of organisation performance as well as local level, specific feedback to guide or motivate local performance. Gallagher et al (2001: 53) suggest that 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 (PPIs) may be customised to the organisation, external measures (benchmarks) are more likely to capture common industry measures. Although there are clearly examples of PPIs that might be applied to monitor OHS performance it is uncertain to what extent they have grown in use, as compared to the traditional LTIFR measure (Gallagher et al, 2001: 53).

Periodic auditing of OHSM

Auditing of OHSM is a second arm to the evaluation of the effectiveness of OHSM within organisations. It complements the ongoing monitoring of performance against performance indicators. Its purpose is to evaluate, on a periodic but regular basis, the effectiveness of OHSM arrangements by a thorough examination of the overall system. It is important that an OHSM audit periodically evaluate the capacity of OHSM arrangements to deliver the required level of OHSM performance (a *validation audit*), as distinct from evaluating compliance with organisational policies, procedures, or external standards and criteria (a *verification or compliance audit*) (Glendon, 1998: 570; and Waring, 1996: 170). Ideally, an OHSM audit is a "deep, critical, systematic and independent examination of everything about an organisation that affects safety" (Waring, 1996: 172).

The periodic but regular auditing of OHSM in an organisation is subject to several debates about the quality and reliability of audit results. For example: what skills and knowledge do auditors need; what constitutes evidence of good or poor OHS performance; what, if any, criteria should be used to benchmark OHS performance in the audit process?

Barron (2000: 125-127) provides an OHS auditor's perspective on auditing of OHSM systems, highlighting some factors that may impact on auditor performance. These include: (1) lack of knowledge of auditing standards by auditors; (2) reliance on documentation as evidence of OHS performance; (3) lack of knowledge of management systems and seeking evidence of integration; (4) failure to differentiate between an inspection of hazards and seeking out underlying weaknesses in the system that give rise to failures to control specific hazards; (5) tight timeframes which can lead to superficial examination of the system; (6) poor knowledge of risks in the industry and organisation audited with the result that high-risk activities are overlooked or inadequately reviewed; (7) poor communication skills which impact on capacity to elicit information as required from a wide variety of people and reporting of key findings; and (8) auditor bias where an auditor is influenced by preconceived impressions of performance rather than objective evidence. Barron (2000:128) emphasises that OHSM auditing is complex and requires development of specific OHS competencies as well as skills in seeking and analysing information, communication and negotiation, a view shared by Waring (1996: 172) who stresses that auditors need adequate, if not advanced knowledge of OHS management, technology and OHS legislation.

In regard to the use of established criteria of audit tools in the evaluation of OHSM, Gallagher et al (2001: 31-32) outline a number of concerns with existing tools and processes:

- audit tools are sometimes regarded as "models" of OHSM, rather than criteria for evaluating these arrangements – they may become an end in themselves rather than a means to improve OHS outcomes;

- audit tools may be very specific and not adapted to the highly varied nature of organisations and their workforces;

- audit processes may not be underpinned by sound auditor skills, standards and procedures;

- audit tools may focus on management of tangible hazards to the exclusion of latent, less visible, long term health risks, including organisational factors;

- audit tools may pay insufficient attention, or not be designed to evaluate, key preconditions of effective OHSM such as senior management commitment and employee involvement in planning, implementation and review of OHSM.

Hopkin's (2000) analysis of the gas explosion at Esso's Longford operations in Australia, highlights the disastrous consequences if inadequate OHSM auditing gives a perception that OHSM is effective but the audit does not reflect reality. In particular, "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). According to Parker (2003a: 13), reflecting on the weaknesses of

audits based on documentation, effective auditing involves conducting systematic evaluation in organisations "to find out what actually happens and where it counts".

It is clear that a rigorous approach to OHSM auditing is required, involving auditors with established knowledge and experience of audit methodologies, OHS management, OHS law and the technical aspects of the industry in which the audit is undertaken. Audit tools, especially if used by inexperienced or more generic quality system auditors (Waring, 1996: 172) are unlikely to yield an informed evaluation of the capacity of OHSM arrangements to deliver OHS performance. To increase the likelihood of gaining a comprehensive picture of the quality of OHSM in the organisation, a triangulated approach to data collection is required (see Waring, 1996: 178-182 for a summary of key sources). A triangulated approach involves interviews with a representative sample of managers, supervisors and workers, observation of conditions and activities, and examination of supporting documentation, including key procedures and records of developmental and preventive action (for example, training needs analysis, plans and records of competencies achieved, action plans, design and procurement standards, committee minutes, work procedures, and so on). Independence of auditors is always required, even if audits are sometimes conducted internally using personnel from different areas of the organisation. However, periodic evaluation by an experienced, external auditor provides the opportunity for a "without fear or favour" perspective, independent observation and fresh insights on the status of organisational OHSM, to alert management in the organisation to key weaknesses and confirm strengths.

In summary, ongoing performance monitoring and periodic, regular auditing are two arms to the process of evaluation and review of OHSM. It is unlikely that either the monitoring of lost time injuries, or auditing compliance against organisational policies and procedures will provide the necessary information about OHS performance and there is a very serious risk of overlooking major or longer term problems. Understanding the strengths and weaknesses of OHSM in organisation, and monitoring progress towards achieving a high level of OHS performance, are more likely to be accomplished using positive performance measures, customised to monitor key preventive activities taken by the organisation, and through an open and comprehensive audit inquiry into OHSM arrangements, seeking out corroborating evidence. Underpinned by a more rigorous approach to OHSM evaluation, the organisation is more likely to have a firmer basis for review and continuous improvement.

5.9   Integration of OHSM

Integration is concerned with embedding OHSM into the organisation's other management arrangements. Tasks and resources for OHSM are distributed throughout the organisation. This is in contrast to the traditional approach where the OHS function is the responsibility of particular staff and marginal to mainstream business activities and management functions. The suggestion that OHSM be integrated into an organisation's other management systems is intended to ensure that OHSM is part-and-parcel of day to day business and key decision-making. This does not mean that there is no place for an OHS function and specialist OHS know-how (see discussion in Section 5.5), only that OHSM is "mainstreamed" rather than being in the "side-car", running alongside mainstream activities of the organisation but never in control of the wheel (Aminoff and Lindstrom, 1981; Jensen, 2002: 204).

There is some evidence to suggest that integration of OHSM into broader management systems is limited in practice. For example, research in the Scandanavian context reveals that changes in production processes are rarely dealt with by OHSM arrangements despite their potential to impact on OHS (Rasmussen and Jensen, 1994: 46; Jensen, 2001: 113 & 2002: 207). Kamp and Le Blansch (2000) observe that OHS tends to be a middle level management function rather than of higher strategic importance.

In some organisations a more limited approach to integration is practiced, for example linking OHSM with management of quality or environment (see Rahimi 1995 for a model integrating quality and environment). However, Kamp and LeBansch (1998: 11) are concerned that the supposed logical linkages underpinning integration of these areas is questionable as quality, environment and OHS involve different main actors (management, the market, state authorities and industrial relations parties), as well as different modes of operation (managerial control, state control, worker representation and negotiation).

In Gallagher's (1997) study of OHSM in 20 Australian organisations, one of the distinguishing characteristics of more highly developed OHSM was a high level of integration of OHS into broader management systems and practices. Moreover, over-reliance on OHS specialists to drive OHS activity without sufficient wider management involvement and support, and an operational culture focused on productivity targets, without consideration of OHS were barriers to improving OHS performance (Gallagher, 1997: ss 5.2, 5.6, 6.1 and 6.2). She argues that a higher level of integration is demonstrated by consideration of OHS in strategic or business plans, in budget reviews and resource allocation, in team-based work organisation, in management performance plans and accountability mechanisms (Gallagher, 1997: s 6.2).

This relationship between integration and degree of development of OHSM could be a crucial one. In Zwetsloot's (2000: 392-393) four stages of OHSM maturity, integration is only a characteristic in the fourth stage of maturity, the proactive stage (see Section 4). In earlier stages the preconditions for the mature approach are laid down, including the development of OHS expertise, learning to systematically identify OHS problems and develop action plans for control action, establishing clear procedures and accountabilities, including periodic auditing and management review. If "integration" is made a primary focus of OHSM before these foundations are in place and a clear commitment to OHSM is established, OHS effort might be diffused as production matters or delivery of services (the core business) are regarded as more pressing priorities. It may be preferable for OHSM to be "shouted from the sidecar" than integrated and lost sight of amidst competing business priorities (Nielsen, 2000: 121).

6.   Factors Influencing the Development and Quality of OHSM

As discussed, the commonly advocated elements of a systematic approach to OHSM do not constitute a formula or recipe for success. How these elements are implemented in a particular organisation will influence the effectiveness of OHSM initiatives, as outlined in Section 5. Optimising how each core element is implemented may increase the chance of successfully improving OHS performance

through systematic OHSM. However, as some of the discussion so far suggests, there are wider organisational factors and responses to external influences that impact upon the degree of development and the quality of OHSM. In essence, successful OHSM involves more than systematic structures and processes. There is a range of contextual influences, within and from outside organisations, that may push or pull OHS activity along, or block or diffuse it, or even prevent it from starting up.

There is some concern that the various proprietary products, standards and guidelines do not adequately address the complexity and diversity of factors that might influence OHS performance. Indeed, Nielsen (2000) argues that contemporary approaches to OHSM fail to take proper account of the wider organisational factors and responses to the external environment because they are based on faulty premises. He considers that OHSM thinking and action are confined by their application of rational organisation theory, of the 1950s and 1960s; embodying the "classical management" principles of planning, organising, co-ordinating, commanding and controlling; and applying the "Taylorist" approach emphasising selecting, training, developing, supervising and controlling workers to ensure that work is done according to management plans. Updating the organisation theory applied to OHSM thinking could help to ensure that contemporary OHSM gives due consideration to behaviour, habits, traditions, cultures, social relations, conflicts of interest, power, competing demands, uncertainty and incoherence in organisations (Nielsen, 2000: 111-115).[6]

The view that these aspects of organisations are equally real and as important to OHSM as management structures and processes is shared by Waring (1996: xiii) who considers that "Work organisations are human activity systems, and success for them is decided not only by systematic structures and processes, but also by complex human factors such as culture, power relations and motivations". He argues that it is crucial to understand both the inner and outer contexts of organisations, and to take account of as many relevant factors as possible, in order to increase the likelihood of successfully managing OHS in a sustainable way (Waring, 1996: 23).

The inner context

There is a range of dimensions of the "inner context" of an organisation which can impact on OHSM. For example, business policy, goals and strategies set directions such as downsizing, contracting out, growth or expansion, increased productivity and work loads, change to new locations or offshore, disaggregation into smaller business units, and devolution of decision-making. Formal organisational structures set areas and limits of responsibility, authority and accountability (which may include designated responsibility for OHS). These formal arrangements affect information flow, decision-making processes and power relations. There are also informal structures and sources of power such as cabals and interest groups that may control information flow and influence decision-making. Power may be derived from a range of sources including position of authority, capacity to influence or coerce others, access to rewards and resources, possession of specialised knowledge or valued information, personal characteristics, capacity for problem solving shared beliefs and peer pressure. Decision-making is also influenced by decision-making style which might be consultative, seeking out a range of views and experience, or directive.

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[6] The latter are perspectives of non-rational theories of organisations including "The Human Relations School", "Bounded Rationality", "Chaos Theory" and "Labour Process Theory".

Different styles influence the quality and timeliness of decisions, as well as how they are perceived and "owned" by those affected. The level and quality of budgetary as well as human resources available for OHS work also impact directly on the effectiveness of OHSM (see Waring, 1996: 39-58).

Also crucial is the concept of culture which "… may be more usefully thought of as a metaphor for a collective identity or world view, ie a complex set or system of shared characteristics of a group of people which include, for example, beliefs, values, attitudes, opinions, motivations, meanings, ideas, expectations, language expression, ways of doing things, rituals, ceremonies, quirks, symbols and habitual responses to situations" (Waring, 1996: 44). Importantly, within an organisation there may be a number of sub-cultures and worldviews. While an organisation may strive to achieve a "safety culture" it is unlikely that this can be directed or achieved by directive or decree. Structures and procedures for OHS will not in themselves achieve a positive OHS culture. Rather, the quality of OHS arrangements is likely to be influenced by the prevailing culture. Culture, to the extent that it can be changed, emerges gradually from the characteristics of its members. It may be more important to recognise the variety of sub-cultures and develop strategies to work with these, encouraging group learning over a longer period of time (Waring, 1996: 48-49 and 58).

While OHS practitioners talk of "developing a safety culture", it is uncertain what this means. Hale (2003: 194) suggests that it is "useful to see this as the motor that makes the structure of the SMS work and resolves the conflicts it comes across". However, there is no concensus on the dimensions of culture or how to measure it. Thus it may be preferable to consider the impact on OHS of organisational culture rather than to focus on the ambiguous concept of "safety culture" (Hale, 2003: 194).

Thus organisational thinking and action on OHSM is influenced by a wide range of factors concerning culture and sub-cultures, power relations, business priorities, production pressures, informal and formal communication and decision-making processes and styles. While these inner contextual factors may not prevent OHSM structures and processes from being established (although in some cases they might), they can nonetheless have a profound impact on the effectiveness of OHSM in operation (Waring, 1996: 58). Successful, organisational level interventions to improve OHS are complex and need to take account of coalitions of power, informal group processes, manifest and latent structures, and bargaining positions of various stakeholders (Saksvik et al, 2003: 723).

The outer context

The outer context is comprised of a range of important influences that may impact on OHSM. Examples of external influences include: public policy and legislation; enforcement, court action and precedents established by case law; quality and other standards; public opinion; the role played by external suppliers of goods and services; workers compensation levies and other insurance; general trading conditions and markets; labour market trends; trade union activity; shareholders; national and local characteristics of the country in which the organisation operates; physical conditions and climate in the location of operation (Waring, 1996: 25-34). Moreover, much of the technology and organisation of production is outside the control of organisational management. Hazards may be inherent in the plant and equipment, substances and materials, and systems of work supplied to a workplace or imposed by contractual

arrangements such as franchising, outsourcing and sub-contracting (Frick and Wren, 2000: 19; Johnstone, 1999a: 107; and see also Section 7 for further discussion of labour market influences on OHSM).

While an organisation is unlikely to be able to directly control all of these factors, it will need to take stock of these influences and develop strategies to take account of and/or address them in its management of OHS (Waring, 1996: 25-34). For example, a more effective response to OHS regulation might be achieved by actively monitoring changes in relevant legislation and its enforcement, as well as changes to relevant technical standards. For organisations impacted by public opinion (for example around issues of noise or chemical exposures, or product safety) the development of a "listening function" and communication strategy may assist in seeking out and engaging with public interests. In regard to the introduction of new risks to the organisation, the risks of new technology, new goods and services can be analysed by pre-procurement or pre-contract assessment. By understanding the basis for setting workers compensation levies and insurance premiums, an organisation is informed about the impact of poor OHS performance on these.

From research - a wider perspective

Some of these wider contextual issues are also highlighted in a meta-analysis of research relevant to OHSM conducted by Hale and Hovden (1998). This analysis reflects studies undertaken principally in the 1980s and early 1990s. The authors also note that OHSM research is dominated by studies in high hazard industries, especially chemical and nuclear power industries, in larger organisations and in North America or western Europe, which can be attributed to the origins of management as a subject in those parts of the world, and hence also OHS management (Hale and Hovden, 1998: 140-146; and see also Hale (2003: 187). The authors identify factors associated with OHS performance in one or more empirical studies conducted according to sound research methodology. While there is clearly a need for further research into OHSM, especially in medium and smaller organisations, and across a wider range of industries, the review is nonetheless informative about factors to take account of in OHSM.

Amongst the factors for which there is evidence of an association with OHS performance, some correspond to the core elements presented in Section 4 and commonly incorporated in OHSM standards and guidelines. These include top management commitment, measurable goals and standards, available financial and human resources, OHS training, access to OHS specialist advice, participation, inspection, risk assessment (including attention to different life cycle phases), incident analysis, evaluation and review of OHSM (Hale and Hovden, 1998: 147-152).

However, a greater number of factors relate to the inner context and the internal characteristics of organisations. Factors of this type that are associated with OHS performance include competence in organisational learning, a problem solving approach to management, a smaller span of control for supervisory arrangements, supervisors with time to plan, supervisor and individual commitment, informal organisation, a leadership style demonstrating concern for the group, quality of working life, career progression, order seeking management rather than damage limiting, counselling vs disciplining for violations, openness to criticism, trust, good labour relations and fairness, standards of excellence and work as a source of pride,

workforce stability and maturity, the content and quality of communication, empowerment of workers and encouragement of innovation, a sense of control and autonomy by workers (Hale and Hovden, 1998: 147-152).

The evidence on some aspects of the inner context is equivocal - they may influence OHS positively or negatively. These are group norms and OHS attitudes of co-workers, the use of rewards and incentive systems and safety promotion which may be a negative influence if it is pursued to the exclusion of other activities (Hale and Hovden, 1998: 147-152). Finally, in the studies reviewed by Hale and Hovden (1998: 152) only one external factor emerged as associated with OHS performance. This is the external pressure applied by the regulator.

In summary, while contemporary models of OHSM invoke some core structures and processes consistent with traditional management approaches, it appears that there is more to OHSM, even if these elements provide a useful framework for OHSM activity. As Hale and Hovden (1998: 156) conclude, an approach that emphasises structures and processes "... misses three-quarters of the factors that have proven links to performance". It is likely that successfully improving OHS performance demands analysis of and attention to an array of internal characteristics of organisations as well as external influences. In essence, it is not only *what* organisations do to manage OHS but also *how* they go about it, and *what else* is going on in the organisation or outside it that impacts on OHSM. In this regard, the early lines of research relevant to OHSM provide some foundations on which to consider the shaping of organisations to build a firmer basis for improving OHSM performance.

7.   Some Further Challenges for OHS Management

The factors outlined in Section 6 are influential in all organisations, larger, medium and small. However, their significance for OHS management is perhaps no more evident than in the expanding areas of precarious employment and the small business sector. These areas present particular challenges for the OHSM strategy, which raises fundamental questions about the relevance and suitability of systematic OHSM to a large proportion of (small) organisations and the workers engaged in precarious employment. These labour market developments are inter-related and both owe their growth to the restructuring of larger private corporations and public sector organisations, in industrialised nations, throughout the 1980s and 1990s. As Walters (2001: 31) explains:

> by the beginning of the 1990s, with corporate restructuring leading to the break-up of traditional forms of production, "flexible firms" in which only core business activities were retained had become a prominent feature of production in all market economy countries. Throughout this 20 year period, in manufacturing as well as in the service sectors, "out-putting, outsourcing, externalising, periphery and core work processes, franchising and licensing" became part of the vocabulary used to describe the now more decentralised, sub-contracted nature of production and business systems.

Most notably, these structural rearrangements produced a decline in full-time, permanent employment, in larger firms. They also led to an increase in the number of smaller businesses and the self-employed; in part-time, casual and temporary employment; in outsourcing, sub-contracting and use of agency labour; in telework

and home-based work; and in business franchising (Quinlan and Mayhew, 2000: 176-178). In Australia, it is estimated that 40% of the workforce are now precariously employed (Burgess and de Ruyter, 2000: 246-269).

As a number of commentators have noted, systematic OHSM approaches that are designed and developed for larger organisations are unlikely to be suitable for smaller organisations or to protect the OHS of workers in precarious employment (see for example Aronsson, 1999; Hale and Hovden, 1998: 156; Quinlan and Mayhew, 2000; Quinlan, 2003; Walters, 2001; Zwetsloot, 2000). This section outlines some of the reasons why these sectors present particular challenges and consider whether OHSM practices can be tailored to address these sectors.

Precarious employment and OHSM

In wide ranging reviews and synthesis of statistical data and research literature relevant to precarious employment, Quinlan and Mayhew (2000), and Quinlan, Mayhew and Bohle (2001) explain that precarious employment is characterised by: economic or reward system pressures; disorganisation of work processes including communication, knowledge and control problems; "buck-passing" of OHS responsibilities; underqualified/under-resourced employment units; isolation (for example, home and tele-workers); increased workloads and deadline pressures; loss of experience and job specific knowledge; a lower likelihood of receiving training; and lower union representation (Quinlan and Mayhew, 2000: 179-182; Quinlan, Mayhew and Bohle, 2001: 335-414).

There are obvious implications for OHSM as these characteristics diminish the infrastructure essential to developing more systematic approaches. As Quinlan and Mayhew (2000: 190) explain:

> A pre-requisite for effective OHS management is a control or command structure in the organisation that enables an unambiguous allocation of responsibilities to various levels of management and sections of workforce/workplace and also enables management to fully govern its work processes. The growth of precarious employment not only creates an increasing number of small employers and self-employed workers hard-pressed to adopt systematic approaches to OHS management but also makes it more difficult for even large organisations to achieve this by complicating their work processes, fostering disorganisation and attenuating decision-making processes. The use of contingent workers places additional demands on induction, training, health services and internal audit systems and it is by no means clear that employers have adapted their OHS management programs accordingly, especially where there is no direct regulatory incentive to do so.

Larger organisations are faced with the challenge of "managing" OHS in relation to contractors, agency labour and remote work. Sub-contracting in its various forms can contribute to poor OHS outcomes due to pressure associated with payment by results, workplace disorganisation due to the presence of different parties at a worksite, and a lack of resources for OHS (Mayhew, Quinlan and Bennett, 1996; Simard and Marchand, 1995). On the other hand, the increasing number of smaller organisations and self-employed are likely to have difficulty with systematic OHSM in view of resource pressures and lack of OHS know-how. These small organisations will in many cases perform work for other organisations, which may have OHSM arrangements in place, and through contractual agreements may be required to work to many and varied OHS procedures set by principals, clients and host employers.

Contractors and labour hire workers also continually face new workplaces, work environments and associated hazards. Thus sub-contractors and hired labour may be exposed to risks that are beyond their control, as well as contributing to risks, through a lack of job-specific knowledge and experience in the diverse work settings they encounter.

Non-permanent workers are also more constrained in raising or refusing unsafe work (Aronsson, 1999) and there is some evidence to suggest that part-time and casual workers are excluded from OHSM arrangements. Even when they work for larger organisations with OHSM arrangements in place, these workers are less likely to be involved in consultation and less likely to receive OHS training (ACIRRT, 1999: 141). All forms of contingent workers are less likely to claim for workers compensation if work-related injury of illness occurs, either because of concern about job security or a perception that they are not covered for workers compensation (Montreuil and Lippel, 2003: 331-358; Quinlan and Mayhew, 2000: 187). Alternatively, in the case of labour hire workers and sub-contractors, if a workers compensation claim is made, the sub-contractor or labour hire firm is generally deemed the employer rather than the principal or host employer. Thus the economic incentive for larger organisations to embrace contingent workers under their OHSM arrangements is relatively weak.

Under OHS law, the situation of contractors and labour hire workers is confusing and inconsistent, in regard to who has responsibility for OHS. In Australia, coverage varies between the ten Commonwealth, state and territory OHS statutes. (See Johnstone, 1999a for a discussion of Australian OHS statutory provisions relating to contractors and labour hire workers). In regard to the OHS of contractors and labour hire workers, in some instances principals and host employers are expected to share responsibility for OHS with contractors and labour hire agencies, and in other cases OHS is the sole responsibility of the contractor or labour hire firm. Coverage is probably best, but not optimal, under the Victorian *Occupational Health and Safety Act 1985* (OHSA (Vic). This requires an employer to provide and maintain, so far as practicable, a work environment that is safe and without risks to health for all employees and independent contractors (and their employees) engaged by the employer (OHSA (Vic): s 21(1)-21(3). This duty extends to the provision and maintenance of safe plant, systems of work; the use, handling, storage and transport of plant and substances; maintenance of a safe workplace; provision of facilities for the welfare of workers; and provision of information, instruction, training and supervision.

Thus there are weaknesses in the coverage of at least some contingent workers under OHS law (in Australia and some other nations). Moreover, the usual practice of workers compensation schemes is to make the immediate employer responsible for workers compensation coverage (rather than principals or host employers). The latter often impose work and time pressures, methods of work organisation and systems of work, and work environments, all of which have significant implications for the OHS of contingent workers. As a result parties that have a key influence on the quality of OHS, have a disincentive, at least legally, to address the OHS of contingent workers in their OHSM arrangements.

Nonetheless, some larger organisations have included "contractor management" in their OHSM systems, and some of the OHS standards and guidelines (discussed in

Section 3) incorporate this as a core element. For example, the International Labour Organisation's (ILO, 2001: 13) *Guidelines on occupational safety and health management systems* advises that "arrangements should be established and maintained for ensuring that the organisation's safety and health requirements, or at least the equivalent, are applied to contractors and their workers". This includes incorporation of OHS in selection criteria for contractors; effective communication with and coordination of the work of contractors; arrangements for incident reporting; provision of training monitoring OHS performance ; and ensuring that OHS procedures are followed by contractors.

Although some corporate systems, OHSM standards and guidelines do refer to contractors, there are concerns about what this entails. On the one hand, a principal might provide guidance about OHSM, incorporating sub-contractors into their OHSM arrangements. On the other hand, a principal might impose a requirement to establish an OHSM system onto sub-contractors as a condition of tender processes, perhaps specifying particular features. To facilitate both development of awareness and ownership of OHSM arrangements, NOHSC (1999b) advocates a partnership arrangement where the principal provides assistance to sub-contractors, and acts more like a "coach" than a controller.

In summary, precarious employment takes different forms, which are inter-related and overlapping. In theory contingent workers, whether casual, temporary or part-time employees, or engaged as contractors or labour hire workers, could be embraced by OHSM arrangements. However, precarious employment presents real challenges to systematic OHSM in view of the added difficulties in clarifying OHS responsibilities, coordinating and scheduling work by multiple parties, problems maintaining communication and establishing know-how, as well as work load and remuneration pressures, and lack of job security. Both OHS and workers compensation law could enhance the motivation to take proper account of the OHS needs to precarious and contingent workers. However, work is needed to ensure comprehensive coverage and acceptance of responsibility for OHS of all workers, not only those in the position of employee. Obligations under OHS and workers compensation law can then be reinforced in standards and guidelines requiring special attention to the OHS of these workers, in view of the particular risks posed by the characteristics of their employment. The potential to "embrace" contingent workers under wider OHSM arrangements is probably greatest where a larger organisation is involved, and is also motivated to manage OHS "holistically" embracing all of those performing work for the organisation. Nonetheless, as discussed further below, many organisations are small and the suitability of systematic OHSM to these organisations warrants special consideration.

Business franchising systems

A particular type of business arrangement, the business franchising system, raises particular questions for the management of OHS. Such arrangements present a confusing picture of who has responsibility, and the scope of that responsibility. A common characteristic of franchising arrangements is the tight control that the franchisor has over the way that the franchisee's enterprise is managed and operated, the systems of work and sometimes facilities, equipment or substances used. It follows that the franchisor's conduct of their business or undertaking has the potential to impact significantly on OHS in the franchisee's operations. Nonetheless, while a

franchisee is expected to follow the franchisor's "blueprint", by contractual agreement, the franchisor does not generally bear legal responsibility for OHS in most Australian jurisdictions.

The OHS statutes are silent on the responsibilities of franchisors, in relation to franchisees and their employees. In only two states, Victoria and Queensland, could the duties of employers and self-employed persons to others, extend to franchise arrangements. In these jurisdictions the duty to others extends to OHS risks arising from the conduct of the undertaking, which has been interpreted broadly. For example, under OHSA (Vic) s 22 an employer or self-employed person must ensure, so far as practicable, that persons are not exposed to risks to their health or safety arising from the conduct of their undertaking. The latter provision might be applied to franchisors. In *Whittaker v Delmina Pty Ltd* [1998] 87IR 268 Hansen J confirmed the scope of the duty to non-employees under OHSA (Vic): s 22:

> undertaking means the business or enterprise of the employer…and conduct refers to the activity or what is done in the course of carrying on the business or enterprise…A business or enterprise…may be seen to be conducting its operation, performing work or providing services at one or more places, permanent or temporary and whether or not possessing a defined physical boundary. The circumstances may be as infinite as they may be variable (see *Whittaker v Delmina Pty Ltd* [1998] 87 IR 268 at 280-81).

The pertinent act or omission is the act or omission in the conduct of the undertaking which gives rise to a potential risk. The broad requirement in regard to the conduct of the undertaking might apply to risks arising from the conduct of a business franchising system. Johnstone (1999a: 107) argues that:

> The broad judicial interpretation of 'the conduct of the undertaking' ... suggests that the franchisee's operation falls within the 'conduct' of the franchisor's 'undertaking'. Consequently a franchisor would have a duty to conduct its undertaking to ensure … that all persons affected by the franchisee's operations are not subjected to risks to their health and safety.

In summary, while a franchisor's degree of control and influence over the operations of a franchisee would suggest that they have a role to play in the management of OHS, specific legal responsibility is only a possibility under two of the Australian OHS statutes. A further potential obstacle to effective management of OHS in business franchises is the fact that many of them are small businesses, albeit part of a larger franchising network.

Small business and OHSM

There are real questions about whether the systematic OHSM strategy can be applied successfully in smaller organisations. The proportion of employment in the small business sector has grown in recent years in industrialised countries. For example, in both Australia and the European Union, approximately one third of the workforce are employed by micro-organisations with less than 10 workers. This is a similar proportion (one third) as work for large organisations with more than 250 workers (NOHSC, 2003; Walters, 2001: 31). The remainder work for small organisations (10-49 employees) or medium-sized organisations (50-250 employees).

There is some concern about the suitability of systematic OHSM for smaller organisations, especially since much of what is known about the OHSM strategy has

been established from larger organisations (Hale, 2003: 187; Hale and Hovden, 1998: 146& 156) When considering the application of systematic OHSM in small organisations it is important to stress that small organisations are not just small versions of larger ones. "They have different features of organisation, function and output, which means that generalisations based on experiences with large enterprises will not necessarily apply" (Walters, 2001: 30).

In a wide ranging analysis, supported by empirical research, of OHS in small organisations in seven European countries, Walters (2001) identifies some important characteristics of smaller organisations, which have the potential to hinder attention to traditional approaches to OHSM. In small organisations, owner managers play the key role in all decision-making with the result that they have too much to handle and tend to concentrate on production matters immediately in front of them. The owner's personal identification with the business means they often behave in a manner which is action-oriented, to get things done, as well as being responsible for ensuring that things go well for the enterprise and the workforce. There is often a difficulty allocating human and financial resources to areas other than production, and management tends to be informal with a lack of formal structures and processes, and a low level of worker representation. The business is vulnerable to external pressures including market and industry fluctuations and regulatory changes. Legal or financial consequences have a personal impact on owner managers and they are less inclined to seek external advice from consultants and advisers unless trust in the source is developed first. "Quick fix" solutions are untrustworthy, and the small and trusted network of advisers is most likely to include the business accountant, principal supplier(s), trustworthy client(s) and owners of cooperating business(es), accountant who are a filter for information received and accepted (Walters, 2001: 32-52).

On face value many of these characteristics would appear to weaken the knowledge, capacity and motivation within small organisations to manage OHS. Models of systematic OHSM are likely to be perceived as an alien concept, particularly when "perceived as an outside imposition on the autonomy of the owner manager and where external advice may not be seen as useful" (Walters, 2001: 144). According to Zwetsloot (2000: 394) the formal systems that result from following standards and guidelines are not attractive for small companies because, as discussed above, they usually work informally and flexibly. Thus management systems may be perceived as too bureaucratic and not adapted to the way that small organisations do business. The approach "demands too much writing and developing routines that are of no use to the company" (Zwetsloot, 2000: 409). So what action should small organisations be influenced to take? Is it systematic OHSM activity or another strategy (such as compliance with more prescriptive OHS regulation)?

In fact, there are a number of examples of successful implementation of a elements of a systematic approach to OHSM in small organisations. For example, in Pearse's (2000) intervention project, the implementation of OHSM was examined in small, fabricated metal product companies in western Sydney, Australia. Participating organisations were provided with expert support and documented guidance. An ongoing support network was established between the participating organisations to exchange information about managing OHS and solutions to problems. This intervention suggests that the implementation of OHSM can be effective in small organisations, if it is facilitated by support and guidance. Similarly, Walker and Tait (2003) investigated the effectiveness of a simple health and safety management

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system in 24 small enterprises in the UK. The approach comprised an OHS policy, risk assessment and the development of control measures. Participants were able to successfully implement these systematic processes with information and support. In Germany, Lehman (2001) used a consultancy network to provide easy-to-understand self help to small businesses. (See also Lamm and Walters, 2003 for a review of some OHS regulatory initiatives and small business).

In Australia, the implementation of workplace health and safety plans was investigated in the Queensland construction industry. Such plans have been mandatory since 1997. In an assessment of the impact of this requirement amongst 150 randomly selected small builders, Mayhew and Ferris (1998: 357-362) found that improved knowledge of OHS legislation led to more frequent inclusion of OHS clauses in contracts, and resulted in more effective hazard control measures. Builders receive information and guidance on the implementation of this legal requirement, from the industry association and the OHS inspectorate. However, a further study of the development and implementation of workplace health and safety plans in the Queensland construction industry, suggests a note of caution. The answer is not in industry or other advisers providing "pre-made" plans or solutions. Johnstone (1998: 180) observed that "off-the-shelf" plans, which might be quite good in their content and coverage of OHS hazards, contributed less to change than plans developed in-house. There was intrinsic value in considering, within the enterprise, both the content of the plan and how it would be implemented.

It appears that simplified approaches to OHSM can be successfully implemented in smaller organisations but a balance is required, incorporating participative, locally-based activity and decision-making, together with OHS know-how. The key is not to "tell them what to do" but to facilitate planning and develop a systematic approach through organisational participants, within a framework that encourages those participants to broaden their horizons, and shift to a more comprehensive and proactive approach to hazard management. However, this poses a dilemma. Other than in specifically designed and supported interventions, is it feasible for OHS agencies to provide dedicated support and assistance to tailor-make OHS programs, for the many and diverse small organisations? Moreover, in view of the heterogeneity of small organisations, there is a need for caution in presuming that OHS interventions successful in one sector can be transferred to others (Walters, 2001: 32).

Walters (2001:375) suggests that there is a strong potential to provide the necessary support for OHS activity in smaller organisations from within their social and business environment, building support networks and establishing relationships with a range of parties that might include larger private enterprises, public sector agencies and local authorities, information agencies, training agencies, business advisers, general and community health care providers, business suppliers, clients and customers. This involves making use of dependency and contractual relationships between organisations and their clients, customers and suppliers as well as others with whom small businesses interact in daily business. Provided trusted relationships can be established to convey and reinforce information about OHS requirements, Walters (2001: 166) is optimistic that there are characteristics of smaller organisations that will facilitate attention to OHS. In particular, there is the potential for faster decision making, informal communication, understanding of practical issues which may facilitate consideration of OHS issues.

These insights about smaller organisations go a considerable way towards understanding whether, and if so how, this sector might be influenced to make OHS a priority. However, there is a need to explore ways to achieve sustainable improvement in OHS practices in smaller organisations. Simplified, systematic processes provide a flexible strategy without the complexity of full-blown systems. Such simplified approaches emphasise participation and communication, development of OHS competency, hazard identification, development of control options and action plans to track implementation (see Hale and Hovden, 1998: 156; Lamm and Walters, 2003; Pearse, 2000; Walker and Tait, 2003).

In summary, this section has raised some important questions about the relevance of systematic OHSM to the large proportion of businesses that are small in size, and their employees, as well as the relevance of this approach to the increasing proportion of the workforce whose employment is precarious, or who work in business franchises. The following section considers, on the available evidence, whether systematic OHSM can be considered to be an effective preventive strategy?

8.   Is OHS Management an Effective Preventive Strategy?

As discussed in Sections 2 and 3 of this paper, systematic OHSM has been actively promoted as a strategy for improving OHS performance at the organisational level. Workplace activities in this area are underpinned by a variety of proprietary and corporate systems, standards and guidelines. Systematic OHSM is also mandated in some countries. In Section 5 we observed that there is some research of relevance to particular elements of OHSM and either their association with improved OHS performance or criteria and preconditions for more effective implementation of particular elements. Intuitively it might seem logical to "manage" OHS as other business functions are, and the elements for advocated for inclusion in the OHSM framework also seem logical. However, as outlined in Section 6, there are contextual factors in the internal characteristics of organisations, as well as factors in the external environment that impact significantly on the capacity and motivation of organisations (and the individuals in them) to develop and implement systematic approaches to OHSM. These factors are relevant to all organisations but, as canvassed in Section 7, in the cases of precarious employment and small organisations, seriously challenge the relevance of systematic OHSM. As already observed it is not only *what* organisations do to manage OHS but also *how* they go about it, and *what else* is going on in the organisation or outside it that impacts on OHSM.

What then can be concluded about the prospects of the systematic OHSM strategy? Does it have the potential to stimulate self-organisation around OHS? And if so, will this action be effective in improving OHS performance? From the discussion so far, it should probably be concluded that the answers to these questions are "maybe", with the qualification "in some organisations". However, it is difficult to be more definitive at this point in time given the current status of OHSM research.

Despite the increasing emphasis on OHSM (systems) and their application (in larger organisations, in industrialised countries), the evidence on the impact of this strategy on OHS performance is limited. The overall impact of systematic OHSM on organisational OHS performance has not been widely studied. As Gallagher et al

(2001: 70) observe there is an absence of research in quite fundamental areas. Little is known about how many organisations have OHSM systems or arrangements, about variables impacting upon effectiveness, about processes by which effective systems become established, or about the most effective types of systems or approaches for different organisations.

Thus, in part the problem is one of limited empirical research in this area. However, as discussed in Sections 6 and 7, many factors inside and outside organisations impact on how they manage OHS. Workers' health and safety is influenced by many factors "which confuse attempts to measure the effectiveness of any system" (Frick and Wren, 2000: 28). Moreover, OHSM success varies depending on the method of implementation, OHSM (system) characteristics, and degree of implementation. In turn these sources of variation add to the complexity of efforts to evaluate and measures OHSM performance (Gallagher et al, 2001: 15). Thus, it is difficult to carry out precisely the research that is needed to evaluate the effectiveness of the OHSM strategy. Amongst studies or reports that do exist, many are weak in that they rely on data from one or only a few organisations and hence cannot be generalised more widely; others rely on "expert opinion" or codified experience and are essentially anecdotal rather than rigorous research. This greatly reduces the pool of studies that can be regarded as providing evidence about OHSM (Hale and Hovden, 1998:135-140).

It is also a concern that the studies of OHSM that do exist have principally sought to isolate the distinguishing characteristics of firms with better OHS performance, rather than evaluating the effectiveness of the OHSM strategy or of particular types of systems (Gallagher et al, 2001: 18). Studies have also tended to rely on injury or workers compensation claims data as an indicator of OHS performance (Gallagher, et al, 2001: 58 and see also 5.8 above for a discussion of the limitations of such data as a performance measure). In this regard it is noteworthy that some more recent research has sought to focus on the quality of the OHSM process, and in particular the positive and proactive steps taken to manage OHS, and the outcomes of this process. (The work of Gallagher, 1997 and 2000; and Jensen, 2001 and 2002; was discussed in Section 5, and the work of Saksvik et al, 2003 is discussed further below).

There remain some fundamental areas of uncertainty about OHS management (systems). These include: understanding of how OHS management actually develops in organisations and whether it is necessary to go through incremental steps; How OHS management works in multi-organisation workplaces, as is the case with extensive contracting and outsourcing, whether it is possible to a holistic focus on organisational OHS given organisational complexity; whether primary organisational drivers of productivity and profitability can be reconciled with prioritising OHS; and the significance of continual, organisational change (Hale, 2003: 194-199).

Amidst the dearth of research into OHSM (systems), one regulatory regime has been the focus of several studies over the past decade, to monitor progress in its implementation. This is the Norwegian regulation on internal control. The Norwegian model involves preparation, development of plans and delegation of responsibilities, assessment, setting priorities and action plans, implementation, evaluation and continuous improvement (Saksvik et al, 2003: 724-725). The intention is that systematic OHSM is the basis for ongoing improvement of OHS performance. The Norwegian regulation on internal control "cross-references" the OHS law in Norway

in that it requires systematic action to ensure and document OHS control activities in accordance with the requirements the six OHS Acts (Saksvik et al, 722).

In telephone surveys of more than 1,000 private and public organisations (per study), using stratified samples to ensure representation of organisations of different sizes, researchers have demonstrated the progressive implementation of internal control in Norway since 1992 (Saksvik and Nytrö, 1996; Nytrö et al 1998; and Saksvik et al, 2003). Implementation has gradually progressed from 8% (in 1993), to 42% (in 1996) and 47% (in 1999). In the 1996 study Nytrö et al observed that the strongest predictor of success in managing OHS was whether and organisation had personnel competent in OHS and with professional training. It appeared that successfully implementing internal control required access to OHS expertise. Also important was external pressure exerted by inspectors, and by business partners or customers (Nytrö et al, 1998: 304). The biggest barrier to implementation of internal control amongst small and medium businesses, in the early years, was a perception that internal control needed to involve a big and complicated system (Torvatn, 1997, cited by Nytrö et al, 1998: 305).

By 1999, 47% of Norwegian organisations has implemented internal control, and 39% were in the process of implementation. Key results reported by Saksvik (2003: 729-732) are that: 81% had a strategy of cooperative implementation involving workers; 68% had trained managers; 75% had trained employees; 83% had assessed risks; 79% had developed action plans; and 62% had implemented OHS improvement actions. On face value these initiatives appear to be progress. However, did implementation of internal control actually lead to improved OHS performance? Saksvik et al (2003: 732) explain that as the internal control regulation requires a procedure of assessment, followed by setting priorities and action plans, and finally implementing OHS improvement actions, enterprises that are implementing the regulation, but have not yet finished this work, should have executed less improvement actions. However, this was not the case. Organisations in the process of implementation differed little from those already using a completed system with respect to implementation of OHS improvement actions, even though they had significantly lower activity on assessments and action plans.

The researchers observe that "it is a strong industrial tradition to act when and where it burns." This means that instead of being part of a strategic plan, interventions are made when OHS problems make a response an immediate necessity. However, unless a thorough assessment is done, the organisation might not find all relevant OHS problems, and without prioritisation and an action plan, important problems might be ignored. There is also the risk of treating the symptoms instead of the causes. Thus it appears that despite the best intentions of internal control regulation to encourage systematic, proactive and comprehensive identification of hazards and control of risks, a narrower mind-set is prevailing. There is a challenge to ensure that organisations apply both the intent, as well as specific steps mapped out by OHS law.

The crucial issue is the quality of OHS improvements. Both the Norwegian research into internal control and Danish research into workplace risk assessment suggest that even if the law requires a systematic approach involving comprehensive identification of OHS problems, prioritisation of problems and action plans to implement solutions, emphasising design and planning to eliminate hazards at the source, these legislative aims and requirements are not readily achieved. (See Section 5.3 for a review of the

Danish studies). The theory behind systematic processes is to identify a wider range of problems, develop more enduring and reliable solutions to them and see them through to implementation. However, these studies suggest that in Norway and Denmark at least, systematic processes in law, are not leading to the qualitative improvements sought. There is a lack of fundamental examination of old routines and established norms (Jensen, 2001 2002; Saksvik et al, 2003: 732).

In summary, research into the effectiveness of systematic OHSM is in its infancy and plagued by both methodological difficulties as well as a wide range of variables that have the potential to impact profoundly on the success (or otherwise) of systematic OHSM initiatives, and which need to be taken account of in research in this area. There is a need for further research that examines the quality of the OHSM process and in particular the positive and proactive steps taken to manage OHS, and the outcomes of this process. In this regard, outcomes need to be clearly measured in terms of preventive OHS impact and improvement in OHS performance, and not merely the implementation of core processes or establishment of specific structures. In other words, can systematic OHSM activity lead to more comprehensive identification of OHS problems, prioritisation of problems and action to implement enduring solutions, emphasising safe place solutions that control risks at source in the design and planning of work organisation, systems of work, plant, equipment, substances and other aspects of the work environment?

9.   Future Directions in Systematic OHSM – Regulation or Voluntary

As indicated by the various initiatives under OHS law, and the range of voluntary, corporate and proprietary systems, standards, guidelines and certification tools, there is increasing interest in systematic approaches to OHSM, as an organisational strategy for the ongoing prevention of work-related injury, ill health and death. However, there is no standardised understanding of the concept or the practice of OHSM, although there is some agreement internationally about core elements (particular structures or processes) of OHSM. There is considerable variation in the approaches taken to developing and implementing the advocated core elements of management commitment; planning, organising and designating responsibility; risk management; worker participation; OHS expertise and competency; policy, procedure and documentation; reporting, investigating and correcting deficiencies; auditing, performance monitoring and review; and integration of OHSM. Moreover, there are differences in terminology used, specifically OHSM systems or systematic OHSM (see Section 4 for a discussion of these terms and further discussion below).

While individual elements of OHSM seem intuitively to have value, there are debates both about the contribution of each to OHS performance (whether it makes a difference or not) and about how each element should be implemented to achieve optimal performance outcomes (as discussed Sections 4 and 5). Thus it is the quality of OHSM initiatives, *how* action is taken that matters as much as particular structures or processes.

This paper has drawn together insights from research and evaluation studies that assist in understanding what approaches to managing OHS might be more effective in enhancing OHS performance. As discussed in Section 5, there is some evidence to suggest that certain characteristics of OHSM are more likely to influence OHS performance positively. First, senior management is committed to and involved in

driving OHSM strategy, which is demonstrated by an active role in OHS planning, promotional and hazard management activities, and review of OHSM arrangements, as distinct from simply expressing "commitment" in an organisational OHS policy or providing management support for OHS activity that is driven by OHS or other personnel. Second, there is a planned and order-seeking approach to OHSM including setting measurable goals to be achieved, securing financial and human resources, and coordinating control of OHSM. Third, responsibility for specific OHSM action is assigned, ensuring that those responsible have the capacity to act and that there are accountability mechanisms in place.

Fourth, in the crucial area of risk management a comprehensive approach is taken that involves involves: (1) identification of all possible sources of harm including those arising from work organisation, psychosocial stressors and ergonomic factors, as well as physical and chemical hazards; (2) using a variety of methods to ensure that hazards are recognised including consultation with workers, analysis of tasks and work roles, review of published sources and other proactive methods, as well as analysis of past incidents; (3) a "safe place" approach to prevent or minimise risks that involves designing out or removing hazards at source and controlling any residual risks by engineering, organisational and procedural means; a "life cycle" approach to risk management that involves identification of hazards and control of risks in all phases of procurement, planning and design; in construction or manufacture; in supply and installation; in commissioning, start up and operation; in shutdown, maintenance and cleaning; and in decommissioning or demolition.

Fifth, workers are actively involved and their participation is supported with training, information and by establishing an effective dialogue between management and workers on OHS issues. Sixth, there is a commitment to organisational learning to develop a local level understanding of OHSM and the OHS "know-how" necessary to support and resource OHSM activities, including both access to or engaging of OHS specialist advisory services and the development of OHS competency amongst managers, supervisors, workers and their representatives, commensurate with their OHS roles and applying principles of adult learning and organisational development to build local knowledge and capacity in OHSM. Seventh, while the organisation is proactive in its approach to risk management it also takes steps to learn from past experience, investigating incidents and adverse occurrences as a source of insight about weaknesses in OHSM arrangements and control of specific hazards, and to ensure that deficiencies are corrected.

Eighth, while OHSM policy, procedures and action taken are documented as a record of systematic activity the organisation recognises the importance of minimising the complexity of documentation, and of maximising understanding and ownership of procedures by those required to implement them. It is also recognised that OHS performance is contingent on the quality of OHSM activity actually implemented, not merely on documentation. Ninth, there are ongoing and periodic checks on the strengths and weaknesses of OHSM by monitoring positive performance indicators and auditing as the basis for evaluation and review of OHSM activities. Tenth, as OHSM activity in the organisation matures and OHS know-how is developed, learning how to systematically identify OHS problems and take action to control them, steps may be taken to embed OHSM into the organisation's other management arrangements, distributing tasks and resources for OHSM throughout the organisation.

Over and above these characteristics of OHSM, reflecting the quality of implementation of core structures and processes for managing OHS, there are a wide range of contextual factors that may influence organisational thinking and action on OHSM. These factors include the internal culture and sub-cultures, power relations, business priorities, production pressures, informal and formal communication mechanisms, decision-making processes and styles, and conditions of employment (as discussed in Sections 6 and 7). They have the potential to have a profound impact on the effectiveness of OHSM in operation and, in some circumstances, could even prevent OHSM structures and processes from being established. Added to these inner contextual factors are external factors that may push and pull OHS activity, inhibit or diffuse it. These include OHS regulatory and enforcement policy; workers compensation premiums, incentives or penalties; supply chain and market influences; technological developments; hazards inherent in plant, equipment, substances, and systems of work supplied to a workplace; hazards or pressures imposed by contractual arrangements such as franchising, outsourcing and sub-contracting; as well as the influence of public opinion and pressure groups in some industries.

Thus, while contemporary models of OHSM invoke some core structures and processes, and there is some research about how these might be implemented to optimise OHSM, it appears that an approach that emphasises structures and processes could miss many factors that influence the development and implementation of OHSM within an organisation. These factors influence organisations of all sizes and across all industries, but are especially pertinent to attempts to manage OHS systematically outside of larger, high risk organisations where the OHSM strategy is most developed. The path to improving OHS performance may lie in identifying and taking into account as many of these contextual factors as possible in the development, implementation and evaluation of systematic OHSM. Moreover, there is a challenge to consider what approaches are most relevant to different types of organisations and working situations, as well as how to take account of as many factors as possible that are relevant to the quality of OHS performance. There is also a need for research to underpin OHSM developments and explore the relationship between systematic OHSM and OHS performance.

What then, are the implications of all of this for the regulation of OHSM? There is a vigorous debate about whether it is appropriate or prudent to regulate OHSM. On the one hand caution is urged. For example, Gallagher et al (2001: 71) suggest that as conditions for effective OHSM are demanding, and in the absence of a better understanding of conditions for success, mandatory requirements may simply increase the number of businesses with ineffective OHSM. They advocate promoting the voluntary implementation of OHSM systems emphasising that success is conditional upon the approach used and how arrangements are adapted to and implemented in the particular organisation (Gallagher et al, 2001: 68). Similarly, Shaw and Blewett (2000: 457-459) are wary of mandating OHSM systems arguing that durable and effective change is best achieved by analysing internal organisational characteristics and implementing initiatives based on values of prevention, responsibility and participation, designed to strengthen working relationships, build trust, improve communication, and redistribute power and control.

Despite some reservations about mandating OHSM, arrangements for managing OHS are already incorporated under OHS statute law in Europe and some Asian nations (as discussed in Section 2). These mandatory provisions vary and moreover the OHSM

principles embodied in OHS law generally reflect systematic structures and processes for managing OHS, rather than a more fully-fledged OHSM system. In contrast, more detailed OHSM arrangements are mapped out by various corporate and proprietary models, as well as in OHSM standards and guidelines. These more detailed and sometimes complex OHSM models are sometimes termed "systems" and as a consequence there is ambivalence about their relevance to a wide range of organisations, especially small and medium enterprises. However, as discussed in Section 4, the system concept simply refers to the interconnectedness and interaction between elements of OHSM in an organised way. In this sense, a system represents a more developed approach to OHSM, rather than a particular corporate or proprietary model or package for managing OHS. The idea of a system as a more developed stage of OHSM is consistent with Zwetsloot's (2000: 392-393) typology of stages in the evolution, within organisations, from an ad hoc approach to dealing with OHS issues, to a more systematic approach, to a more developed system and finally to a fully integrated and proactive OHSM system for continuous improvement of OHS.

Any discussion of the regulation of OHSM needs to be explicit about what is to be regulated (system or systematic structures and processes). It also needs to be clear about the form of "regulation". In one form regulation involves establishing provisions under OHS law, whether mandatory (in an Act or regulations) or evidentiary (for example in a code of practice). A different form of regulation of OHSM involves establishing a requirement for implementing OHSM as a prerequisite for self-insurance under workers compensation schemes, for receiving a bonus or incentive on workers compensation insurance premiums, or as a precondition for exemption from more routine enforcement (as discussed in Section 3). These latter forms of regulation have typically involved more detailed performance standards, guidelines or certification of systems. (See also Baldwin, Scott and Hood, 1998:4 for a discussion of different forms of regulation). Making explicit this wider spectrum of strategies for regulating OHSM provides firmer foundations for considering whether, and if so in what form, regulation of OHSM might, as Gunningham and Johnstone (2000: 126) suggest, stimulate "modes of self-organisation within firms in such a way as to make them self-reflective and to encourage internal self-critical reflection about their OHS performance".

Thus, the regulation of OHSM can be considered as a spectrum of possibilities from the most prescriptive (mandating a fully developed OHSM system under OHS law) to the most flexible (establishing incentives to adopt systematic structures and processes for managing OHS). Somewhere in between fall the possibilities of mandating systematic structures and processes (for example the approach *European Framework Directive*) and incentives to achieve more fully-fledged OHSM systems (as required of organisations self-insuring for workers compensation in some jurisdictions). (See also Gunningham and Johnstone, 1999: 80 for an outline of different types of regulatory incentive schemes to stimulate OHSM). The Norwegian regulation of internal control is another variation in the spectrum as it mandates systematic action to ensure and document activities to implement the mandatory requirements of OHS law in that country, including the management of specific hazards and development of workers.

Intuitively there seems to be value in encouraging progressive development of systematic OHSM activity in organisations, moving from the ad hoc stage to a systematic or system stage, and ultimately a proactive approach (see discussion of

Zwetsloot's, 2000, evolution of OHSM in organisations in Section 4). Nonetheless, in view of the complexity of contextual factors impacting upon OHSM and the diversity of organisational characteristics, work and employment relationships, there is a need for caution about prescribing particular models or approaches. More fully-fledged models of OHSM might be reserved for enterprises in certain (high risk) sectors and of a certain (larger) size that, most crucially, lend themselves most readily to more developed OHSM systems. This is the approach advocated by Gunningham and Johnstone (1999: 337) who argue for the provision of incentives for developing and implementing OHSM systems by the "best players". The latter are organisations with a commitment to the "long haul", rather than an expectation of short-term benefits, as a full-blown OHSM system will take several years to introduce, develop and institutionalise into any organisation. In essence, to be successful, a strategic and long term approach to improving OHSM is required (Gunningham and Johnstone, 1999: 46).

With the goal in mind of encouraging progressive development of OHS management activity across a wider range of organisations, from an ad hoc to a proactive approach, a regulatory approach is proposed that makes explicit the principles and values of systematic OHSM, guiding OHSM strategy according to the evidence-base of what contributes to improved OHS performance. Such an approach would recognise that it is the quality of action taken to manage OHS that makes a difference to OHS performance and not only particular structures and processes. To illustrate this approach, Table 2 presents a modified set of core elements, consistent with the characteristics of successful OHSM emerging in research so far.

The elements outlined in Table 2 are not in the form of a regulatory model. However, they could provide the basis for framing a set of general duties, process-based provisions and documentation requirements designed to stimulate systematic OHSM. In this regard OHS law typically contains a mix of different styles of provisions including: (1) general duties or principles which require the obligation bearer to exercise care but do not specify the OHS outcome or the action to be taken; (2), systematic process-based provisions which identify a particular process, or series of steps to be followed in the pursuit of safety; (3) performance-based provisions which specify the OHS outcome required but leave open the measures to achieve this; (4) specification provisions which tell the obligation bearer precisely what measures to take; and (5) documentation provisions which require the obligation bearer to document the measures taken to comply with a general duty, performance or process-based provision. (Baldwin and Cave, 1999: 118-120; Gunningham, 1996: 222-229 and Gunningham and Johnstone (1999: 23).

Through provisions of different types, OHS law already contains some elements of systematic OHSM but currently presents an incomplete framework of provisions, which are also sometimes spread between OHS Acts, regulations or evidentiary standards. There is therefore a case to be made for achieving greater alignment between existing provisions of OHS law and the more comprehensive set of structures and processes of systematic OHSM emerging from OHSM research, as summarised in Table 2. A consistent approach, "pushing OHS activity in the same direction", may help to reinforce and build understanding of systematic OHSM, over time. Indeed, Saksvik et al, 2003: 736 suggest that the Norwegian regulation on internal control, which consists of a simple, systematic approach to implementing the requirements of existing OHS law, has led to improvements because this approach has been

continuously applied and enforced by OHS authorities and inspectors over a ten year period, without fundamental changes, and thus it is regarded as an approach that will continue to be supported rather than a passing "fad".

A more comprehensive and systematic approach to OHSM also has implications for enforcement policy and strategy. Systematic structures and processes do not guarantee good OHS performance (Gunningham and Johnstone, 1999: 53; Saksvik et al, 2003). Thus, it is suggested that enforcement should be based on OHSM outcomes achieved, rather than structures or processes implemented. The latter should remain firmly in the position of being means or strategies for improving OHSM, but not ends in themselves. As emphasised, what is crucial is the quality of OHS performance. An approach akin to the validation audit (described in Section) is appropriate. This involves a rigorous evaluation of the effectiveness of OHSM arrangements by an independent and experienced OHSM auditor with knowledge of OHS law and the technical aspects of the industry, and drawing on interviews, observation and examination of supporting documentation (Barron, 2000; Waring, 1996: 178-182).

In summary, there is a lot more to successful OHS management than regulatory initiatives and there is a vigorous debate about whether it is appropriate or prudent to attempt to regulate OHSM. Nonetheless, it seems to be useful to consider how organisational response to OHS may be influenced in order to progress from an ad hoc approach to a more systematic one and ultimately, if appropriate to the organisation, a more fully-fledged system. Regulation is one strategy for stimulating self-organisation around OHSM. However, it is important to distinguish different forms of regulation, as different approaches may suit different organisations. Moreover, to the extent that regulation of OHSM is pursued, it is prudent to take account of insights emerging from OHSM research. This suggests that how particular structures and processes are implemented, as well as internal organisational characteristics and external factors will all impact on how successfully OHS is managed. The case for aligning OHS management provisions under OHS law with a more comprehensive set of systematic OHSM principles and processes, derives from emerging evidence that certain elements are associated with improved OHS performance. However, in view of the complexity of contextual factors impacting on the implementation of OHSM there is a need for caution about prescribing particular models or approaches and it is likely that more fully-fledged models of OHSM are most appropriately reserved for the "best players" with a demonstrated commitment to longer term change. In regard to enforcement of OHSM it is crucial that OHS outcomes are the benchmark of performance, recognising that systematic structures and processes are means to improving, but not a guarantee of, OHS performance.

Table 2: Principles for Regulating Systematic OHS Management

Management commitment and leadership
Senior management is committed to OHSM and actively involved in driving OHSM strategy.

Organising, planning and resourcing
Planning processes set OHS objectives, strategies and programs. Financial and human resources for addressing OHS are designated, including compliance with relevant OHS legislation and standards. Plans may take the form of formal strategic plans of specific action plans.

Responsibility and accountability
Responsibilities are identified and allocated to individuals within the organisation, accountability mechanisms are established, support is provided as well as authority to act.

OHS know-how, development of OHS competency and organisational learning
OHS expertise is established in-house or engaged from external OHS services to support and guide OHSM. Organisational learning is fostered to develop local understanding of OHS principles and OHS competencies of managers, supervisors and workers are developed commensurate with roles.

Risk management
Risk management is central to OHSM and is a comprehensive process involving: (1) identification of all possible sources of harm including those arising from work organisation, psychosocial stressors and ergonomic factors, as well as physical and chemical hazards; (2) a variety of methods to ensure that all hazards are recognised including consultation with workers, analysis of tasks and work roles, review of published sources and other proactive methods, as well as analysis of past incidents; (3) a "safe place" approach to prevent or minimise risks that involves designing out or removing hazards at source and controlling any residual risks by engineering, organisational and procedural means; (4) a "life cycle" approach to risk management that involves identification of hazards and control of risks in all phases of procurement, planning and design; in construction or manufacture; in supply and installation; in commissioning, start up and operation; in shutdown, maintenance and cleaning; and in decommissioning or demolition.

Communication and Participation
Workers actively participate in OHS, supported by training, information and opportunities to investigate issues and contribute to solutions. Mechanisms are in place to ensure open and effective dialogue between managers, supervisors and workers.

Contracting and Contingent Workers
Arrangements are established to address OHS in the work of contractors and other contingent workers, in relation to their OHS and the OHS of others who might be affected by their work. These arrangements are established in partnership with these groups.

Health surveillance, environmental monitoring, reporting, investigating and correcting deficiencies
Organisational learning from experience is advanced by identifying, reporting and investigating OHS problems and incidents, seeking to identify weaknesses in OHSM arrangements and control of specific hazards in order to take corrective action and strengthen OHSM.

Emergency response

The impact of adverse occurrences is minimised by provision of (or access to) first aid and medical care, counselling, emergency evacuation and response procedures

Policy, procedures and other documentation

Structures, planning activities, responsibilities, policy and procedures, resources and action taken to develop, implement, evaluate and review OHSM are documented. The amount and complexity of documentation is minimised and participation emphasised to promote ownership and understanding of procedures.

Auditing, review and performance monitoring

Arrangements for managing OHSM are audited by competent and independent personnel, and reviewed and improved on the basis of strengths and weaknesses identified. Positive performance measures are established and there is ongoing monitoring of OHSM performance against these indicators.

Integration

Progressively, as organisational learning and activity on OHSM matures, OHSM is integrated into the organisation's other management systems and decisions, and tasks and resources for OHSM are distributed throughout the organisation.

10. Conclusion

As this paper has argued, systematic OHSM is a multi-dimensional strategy which takes different forms and embodies different values and principles. In some forms it is mandatory under OHS law, in others it is a voluntary initiative of a corporation or proprietary product. Most is known about OHSM from its application in larger, especially high risk organisations and yet it has been applied across a wide range of organisations, as in the Norwegian regulatory requirement for internal control. Simplified approaches to OHSM appear to have been effective in smaller organisations where they have been resourced and supported (see also Section 7). However, in some instances, for example Denmark, regulation has focused on the specific process of risk management (rather than OHSM) because of scepticism about the suitability of a more comprehensive approach to OHSM to smaller business (Jensen, 1996).

While the goal of stimulating self-organisation around OHS within firms is sound, as Gallagher (1997: s 6.1) concludes:

> … the development of effective health and safety management systems is not an easy, quick, or spontaneous process. It requires sound knowledge of current health and safety management principles and systems, the resources to turn this knowledge into action, the broad and active involvement of key workplace personnel, and ongoing nourishment.

How then, if the regulation of systematic OHSM is pursued, is it possible to ensure that the response to regulation is substantive rather than perfunctory? Jensen (2002: 219) argues that organisations engage in a form of institutional isomorphism (after DiMaggio and Powell, 1991). Within this conceptual framework, organisational action to establish OHSM arrangements in response to government mandate may be motivated more to sustain organisational legitimacy, rather than more substantive

action that achieves genuine improvements in OHSM. Thus the normative response of an organisation may not take on the aims and intentions of law and policy makers. Nonetheless, a response that begins as a perfunctory one may gradually take shape as staff involved take on advocacy for their functions, reinforced by formal education and development of a cognitive base and the wider network of OHS professionals and OHS services. It is crucial that this wider network understands the intentions behind OHSM regulation and the emerging research evidence of what is more effective in improving OHS performance, and supports the development and implementation of OHSM activities accordingly (Jensen, 2002: 220).

Implicit in this approach is the notion of the progressive evolution of systematic OHSM as an organisation gradually develops an approach that suits its needs but meets the criteria of effective OHSM (as discussed throughout this paper and summarised in Table 2). Thus systematic OHSM may begin with a simplified approach, emphasising the development of OHSM know-how, capability and establishing a local understanding of the key principles and values of systematic OHSM, before progressing to more sophisticated OHSM systems. It therefore might be expected that, across a number of organisations managing OHS, a spectrum of OHSM development might be observed from more ad hoc approaches, to implementation of systematic processes, to more fully integrated systems but, over time, increasing the proportion of organisations managing OHS systematically.

References

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

Alcorso, C (2002) *Improving Occupational Health and Safety Information to Immigrant Workers in New South Wales*, Working Paper 78, ACIRRT, University of Sydney, Sydney.

Aminoff, S and Lindström, K (1981) *More Effective Forms of OHS Activities and of Organising OHS Activities*, Swedish University of Agricultural Sciences, Garpenberg.

Argyris, C (1999) *On Organizational Learning*, 2nd ed, Blackwell, Oxford.

Argyris, C and Schön, D (1996) *Organizational Learning II: Theory, Method and Practice*, Addison-Wesley, Reading, Massachusetts.

Aronsson, G (1999) 'Contingent workers and health and safety', *Work, Employment and Society*, 13: 439-459.

Ashby, S and Diacon, S (1996) 'Motives for occupational risk management in large UK companies', *Safety Science*, 22(1-3), 229-243.

Australian Workplace Software (2003) *SHE (Safety, Health and Environment) Professional: OHS Risk Management*, online at http://www.aws.com.au.

Baker, R (1998) 'Worker education and training', in *Encyclopedia of Occupational Health and Safety*, International Labor Organisation, Geneva.

Baldwin, R and Cave, M (1999) *Understanding Regulation. Theory, Strategy and Practice*, Oxford University Press, Oxford.

Baldwin, R, Scott, C and Hood, C (1998) *A Reader on Regulation*, Oxford University Press, Oxford.

Bamber, L (1994) 'Risk management: techniques and practice', in Ridley, J *Safety at Work*, 4th ed, Butterworth Heinemann, Oxford (pp 174-207).

Baram, M (1997) 'Shame, blame and liability: why safety management suffers organizational learning disabilities', in Hale, A, Wilpert, B and Freitag, M. *After the Event: From Accident to Organisational Learning*, Pegamon, UK (pp 163 – 177).

Barron, J (2000) 'Accurate assessment of OHSMS performance: impact of auditor skills' in Pearse, W, Gallagher, C and Bluff, E eds *Occupational Health and Safety Management Systems. Proceedings of the First National Conference*, Crown Content, Sydney, pp 123-129 (also online at http://www.workcover.nsw.gov.au).

Bohle, P and Quinlan, M (2000) *Managing Occupational Health and Safety. A Multidisciplinary Approach*, MacMillan, Melbourne.

Boix, P and Vogel, L (1999) *Risk Assessment at the Workplace - A Guide for Union Action*, European Trade Union Technical Bureau for Health and Safety, Brussels.

Braithwaite, J (1985) *To Punish or Persuade: Enforcement of Coal Mine Safety*, State University of New York Press, Albany, USA.

Broberg, O and Posniak, I (2001) 'Integrating aspects of work environment into a national research and development programme on food technology', *Human Factors and Ergonomics in Manufacturing*, 11(2): 117-130.

BSI (1999) *Guide to Occupational Health and Safety Management Systems*, BS 8800, British Standardisation Institution, London.

Burgess, J and de Ruyter, A (2000) 'Declining job quality in Australia: another hidden cost of unemployment', *Economic and Labour Relations Review*, 11(2): 246-269.

Cal/OSHA (2002) *Guide to Developing Your Workplace Injury and Illness Prevention Program*, Department of Industrial Relations, California.

Cohen, A, Smith, B, and 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 and Cleveland, R (1983) 'Safety programs in record-holding plants', *Professional Safety*, March: 26-32.

Cutler, T and James, P (1996) 'Does safety pay? A critical account of the Health and Safety Executive Document: "The Costs of Accidents", *Work, Employment and Safety,* 10(4): 755-765.

Della-Giustina, D (1996) *Safety and Environmental Management*, Van Nostrand Reinhold, New York.

DeMichiei, J, Langton, J, Bullock, K and Wiles, T (1982) *Factors Associated With Disabling Injuries in Underground Coal Mines*, MSHA, USA.

DiMaggio, P and Powell, W (1991) 'The iron cage revisited: institutional isomorphism and collective rationality in organisational fields', in Powell, W and DiMaggio, P (eds) *The New Institutionalism in Organisational Analysis*, The University of Chicago Press, Chicago (pp 63-82).

DNV (1997a) *International Safety Rating System*, International Loss Control Institute, ISRS, UK.

DNV (1997b) *Standard for Certification of Occupational Health and Safety Management Systems*, Det Norske Veritas, Oslo.

Dupont (2003) *Dupont Safety Resources*, online at

 http://www.dupont.com/safety/workplace/.

EASHW (2002) *Systems and Programs. The Use of Occupational Safety and Health Management Systems in the Member States of the European Union*, European Agency for Safety and Health at Work, Brussels.

Ellis, N (2001) *Work and Health: Management in Australia and New Zealand*, Oxford University Press, Melbourne.

European Commission (1989) 'Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work', *Official Journal* L 183 , 29/06/1989, pp 1 – 8.

Finansministeriat (1998) *Status pa Arbejdet med Gennemforelse af Arbejdspladsvurdering i de Statslige Institutioner*, Ministry of Finance, Copenhagen.

Frick, K and Wren, J (2000) 'Reviewing occupational health and safety management - multiple roots, diverse perspectives and ambiguous outcomes', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 17-42).

Gaertner, G, Newman, P, Perry, M, Fisher, G and Whitehead, K (1987) "Determining the effects of management practices on coal miners' safety', In *Proceedings - Human Engineering and Human Resource Management in Mining* (pp 82-94).

Gallagher, C (1994) 'Occupational health and safety management systems: links with performance', in *Belts to Bytes,* Conference Proceedings, SA WorkCover Corporation, Adelaide.

Gallagher, C (1997) *Health and Safety Management Systems: an Analysis of Systems Types and Effectiveness.* National Occupational Health and Safety Commission, Sydney.

Gallagher, C (2000) 'New directions: innovative management plus safe place' in Pearse, W, Gallagher, C and Bluff, E eds *Occupational Health and Safety Management Systems. Proceedings of the First National Conference*, Crown Content, Sydney, pp 65-82 (also online at http://www.workcover.nsw.gov.au).

Gallagher, C, Underhill, E and Rimmer, M (2001) *Review of the Effectiveness of OHS Management Systems in Securing Healthy and Safe Workplaces*, Report Prepared for the National Occupational Health and Safety Commission, Victoria University of Technology, Melbourne.

Glendon, I (1995) 'Risk management in the 1990s: safety auditing', *Journal of Occupational Health and Safety - Australia and New Zealand*, 11(6): 569-575.

Glendon, I and Booth, R (1995) 'Risk management for the 1990s: measuring management performance in occupational health and safety', *Journal of Occupational Health and Safety – Australia and New Zealand*, 11(6): 559-565.

Glendon, I and McKenna, E (1995) *Human Safety and Risk Management*, Chapman and Hall, London.

Goodman, P (1987) *Determining the Effect of Incentive Programs on the Occurrence of Accidents, Injuries and Productivity*, US Department of Interior, Bureau of Mines.

Gunningham, N and Johnstone, R (1999) *Regulating Workplace Safety – Systems and Sanctions*, Oxford University Press, New York.

Gunningham, N and Johnstone, R (2000) 'The legal construction of OHS management systems', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 125-146).

Haddon, W (1980) 'The basic strategies for reducing damage from hazards of all kinds', *Hazard Prevention*, Sept/Oct: 8-12.

Hale, A (1997) 'The goals of event analysis', in Hale, A, Wilpert, B and Freitag, M. *After the Event: From Accident to Organisational Learning*, Pegamon, UK (pp 1-10).

Hale, A (2003) 'Safety management in production', *Human Factors and Ergonomics in Manufacturing*, 13(3): 185-201.

Hale, A and Glendon, I (1987) *Individual Behaviour in the Control of Danger*, Elsevier Science Publishers, Amsterdam.

Hale, A and Hovden, J (1998) 'Management and culture: the third age of safety. A review of approaches to organisational aspects of safety, health and environment', in Feyer, A and Williamson, A eds, *Occupational Injury. Risk Prevention and Intervention*, Taylor and Francis, London, pp 129 - 165.

Hale, A, Heming, B, Carthey, J and Kirwan, B (1997) 'Modelling of safety management systems', *Safety Science*, 26 (1-2):121-140.

Holmes, N, Triggs, T, Gifford, S and Dawkins, A (1997) 'Occupational injury risk in a blue collar, small business industry: implications for prevention', *Safety Science*, 25(1-3): 67-78.

Hopkins, A (1995) *Making safety work - getting management commitment to occupational health and safety*, Allen and Unwin, Sydney.

Hopkins, A (1999) 'For whom does safety pay? The case of major accidents?' *Safety Science*, 32: 143-153.

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

HSE (1997) *Successful Health and Safety Management,* HSG 65, Health and Safety Executive, HSE Books, Norwich.

Hudson, P (2000) 'Safety management and safety culture - the long, hard and winding road' in Pearse, W, Gallagher, C and Bluff, E eds *Occupational Health and Safety Management Systems. Proceedings of the First National Conference*, Crown Content, Sydney (also online at http://www.workcover.nsw.gov.au).

ILO (2001) *Guidelines on occupational safety and health management systems*, International Labour Office, Geneva.

James, C (1993) 'Social processes in reporting or non-reporting', in Quinlan, M (ed) *Work and Health*, MacMillan, Melbourne.

Jensen, P (2001) 'Risk assessment: a regulatory strategy for stimulating work environment activities?' *Human Factors and Ergonomics in Manufacturing*, 11(2): 101-116.

Jensen, P (2002) 'Assessing assessment: the Danish Experience of Worker Participation in Risk Assessment', *Economic and Industrial Democracy*, 23(2): 201-227.

Johnstone, R (1997) *Occupational Health and Safety Law and Policy. Text and Materials*, 2nd edition, Law Book Company, Sydney.

Johnstone, R (1999a) 'Paradigm crossed? The statutory occupational health and safety obligations of the business undertaking' *Australian Journal of Labour Law,* 12 pp 73-112.

Johnstone, R (1999b) *Evaluation of Queensland Construction Safety 2000 Initiative*, National Occupational Health and Safety Commission, Sydney.

Kamp, A and LeBansch, K (2000) 'Integrating management of OHS and the environment - participation, prevention and control', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 413-136).

Kivimaki, K, Kalimo, R and Salminen, S (1995) 'Perceived nuclear risk, organisational commitment, and appraisals of management: a study of nuclear power plant personnel', *Risk Analysis*, 15(3): 391-396.

Knight, R and Pretty, D (1998) *The Impact of Catastrophes on Shareholder Value*, Oxford University Business School, Oxford.

Kolb, D (1984) *Experiential Learning*, Prentice-Hall, New Jersey.

Kozlowski, S and Doherty, M (1989) 'Integration of climate and leadership: examination of a neglected issue', *Journal of Applied Psychology*, 74(4): 546-553.

Krause, T (1997) *The Behaviour-Based Safety Process. Managing Involvement for an Injury-Free Culture*, Van Nostrand Reinhold, New York.

Lamm, F and Walters, D (2003) *OHS in Small Organisations: Some Challenges and Ways Forward*, Working Paper 15, National Research Centre for OHS Regulation, Australian National University, Canberra.

Lehman, S (2001) 'Partnership with intermediaries in OSH – a chance to reach SMEs,' in Proceedings of the 2nd European ENWHP Conference, 18-19 June, Lisbon, Portugal.

Lindøe, P and Hansen, K (2000) 'Integrating internal control into management systems: a discussion based on Norwegian case studies', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 437-455).

Mayhew, C and 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 and Safety - Australia and New Zealand*, 14(4): 357-362.

Mayhew, C, Quinlan, M and Bennett, L (1996) *The Effects of Sub-Contracting Outsourcing Upon OH&S*, Industrial Relations Research Centre, University of New South Wales, Sydney.

Mendeloff, J (1996) *A Preliminary Evaluation of the "Top 200" Program in Maine*, Report to the Office of Statistics, Occupational Safety and Health Administration, Washington DC.

Ministry of Manpower, Singapore, *Factories (Amendment) Act, 1999*.

Montreuil, S and Lippel, K (2003) 'Telework and occupational health: a Quebec empirical study and regulatory implications', 41: 331-358.

National Academy of Sciences (1982) *Towards Safer Underground Coal Mines*, National Research Council.

Needleman, C (2000) 'OSHA at the crossroads: conflicting frameworks for regulating OHS in the United States', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T,

Systematic Occupational Health and Safety Management. Perspectives on an International Development, Pergamon, Amsterdam (pp 67-85).

Nelkin, D (1985) *The Language of Risk: Conflicting Perspectives On Occupational Health*, Sage, London.

Nielsen, K (2000) 'Organisation theories implicit in various approaches to OHS management', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 99-123).

NNI (1996) *Nederlands Praktijkrichtlijn NPR 5001, Model voor een Arbomanagementsysteem*, Technical Report NPR 5001: Guide to an Occupational Health and Safety Management System, Standardisation Institute of the Netherlands, Delft.

NOHSC (1994) *Positive Performance Indicators: Beyond Lost Time Injuries. Part 1 – Issues*, AGPS, Canberra.

NOHSC (1998) *National Guidelines for Integrating OHS Competencies into National Industry Competency Standards*, [NOHSC: 7025 (1998)], National Occupational Health and Safety Commission, Sydney.

NOHSC (1999a) *Occupational Health and Safety Performance Measurement in the Construction Industry – Development of Positive Performance Indicators*, National Occupational Health and Safety Commission, Sydney.

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

NOHSC (2003) *Small Business OHS Statistics*, National Occupational Health and Safety Commission, Canberra, online at http://www.nohsc.gov.au.

NSCA (2000) *5-Star Health and Safety Management System*, National Safety Council of Australia, Sydney.

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

O'Dea A and Flin R (2003) *The Role of Managerial Leadership in Determining Workplace Safety Outcomes*, Prepared by University of Aberdeen for Health and Safety Executive, HSE Books, HMSO, Norwich.

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

OSHA (1989) *Safety and Health Program Management Guidelines; Issuance of Voluntary Guidelines*, Federal Register 54, 3904-3916, Occupational Safety and Health Administration, Washington DC.

OSHA (2003a) *Draft Proposed Safety and Health Program Rule*, 29 CFR 1900.1, US Department of Labour, Washington.

OSHA (2003b) *An Overview of VPP*, online at

http://www.osha.gov/oshprogs/vpp/overview.html.

Pearse, W (2000) 'Club zero: implementing OHS management systems in small to medium fabricated metal product companies,' in Pearse, W, Gallagher, C and

Bluff, E eds *Occupational Health and Safety Management Systems. Proceedings of the First National Conference*, Crown Content, Sydney, pp 83-100 (also online at http://www.workcover.nsw.gov.au).

Queensland Division of Workplace Health and Safety (1999) *Tri Safe. Management System Audit*, Queensland Department of Industrial Relations, Brisbane.

Quinlan, M (2003) *Developing Strategies to Address OHS and Workers' Compensation Responsibilities Arising From Changing Employment Relationships*, Research project commissioned by the WorkCover Authority of New South Wales, Sydney.

Quinlan, M and Mayhew, C (2000) 'Precarious employment, work re-organisation and the fracturing of OHS management', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 175-198).

Quinlan, M., Mayhew, C. and Bohle, P. (2001) 'The global expansion of precarious employment, work disorganisation, and consequences for occupational health: a review of recent research', *International Journal of Health Services*, 31(2), 335-414.

Parker, C (2003a) 'Arm twisting, auditing and accountability. What regulators and compliance professionals should know about the use of enforceable undertakings to promote compliance', presentation to the Australian Compliance Institute, Melbourne, 28 May, 2003.

Parker, C (2003b) 'Regulator-required corporate compliance program auditing' *Law and Policy* 25 (in press).

Rahimi, M (1995) 'Merging strategic safety, health and environment into total quality management', *International Journal of Industrial Ergonomics*, 16(2): 83-94.

Rasmussen, B (1996) *Arbejdsmilijostyring i Norden. Nordiske Erfaringer med Arbejdspladsvurdering ag Intern Kontrol*, TemaNord, Copenhagen.

Rasmussen, B and Jensen, P (1994) 'Working environment management systems: trends, dilemmas, problems', in Bradley G and Hendrick, H (eds) *Human Factors in Organisational Design and Management – IV,* Elsevier Science, Amsterdam.

Republic of Korea, *Industrial Safety and Health Act, 1990.*

Saksvik, P, Torvatn, H and Nytrø, K (2003) 'Systematic occupational health and safety work in Norway: a decade of implementation', *Safety Science*, 41(9): 721-738.

SA WorkCover Corporation (2001a) S*afety Achiever Business System. Performance Standards*, WorkCover Corporation, Adelaide.

SA WorkCover Corporation (2001b) *Code for the Conduct of Exempt Employers under the WorkCover Scheme,* WorkCover Corporation, Adelaide.

SA WorkCover Corporation (2002) *Introducing the Safety Achiever Business System*, SA WorkCover Corporation, Adelaide.

SA WorkCover Corporation (2003) *Safety Achiever Business System*, SA WorkCover Corporation, Adelaide,

online at http://www.workcover.com/employers/levy/LevySchemeSABS.htm.

SAA (1997) *Occupational Health and Safety Management Systems - General Guidelines on Principles, Systems and Supporting Techniques*, AS/NZS 4804, Standards Australia, Sydney and Standards New Zealand, Wellington.

SAA (2001) *Occupational Health and Safety Management Systems - Specification With Guidance for Use*, AS 4801, Standards Australia, Sydney and Standards New Zealand, Wellington.

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

Shaw, A and Blewett, V (2000) 'What works? The strategies which help to integrate OHS management within business development and the role of the outsider', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 447-473).

Simard, M and Marchand, A (1995) 'A multilevel analysis of organisational factors related to the taking of safety initiative by work groups', *Safety Science*, 21: 113-129.

Smallman, C and John, G (2001) 'British directors perspectives on the impact of health and safety on corporate performance', *Safety Science*, 38: 227-239.

Smith, M, Cohen, H, Cohen, A and Cleveland, R (1978) 'Characteristics of successful safety programs', *Journal of Safety Research*, 10(1): 5-15.

Sundstrom-Frisk, C (1998) 'Understanding human behaviour: a necessity in improving safety and health performance,' *Safety Science*, 15 (1): 37-45.

Sundstrom-Frisk, C (1996) 'Promoting safe behaviour', In Proceedings, International Congress on Occupational Health, ICOH '96, *For a Good Working Life*, Stockholm, pp 13-18.

Swedish Work Environment Authority (2001) *Systematic Work Environment Management: Provisions of the Swedish Work Environment Authority on Systematic Work Environment Management, Together With General Recommendations on the Implementation of the Provisions*, Swedish Work Environment Authority, Stockholm.

Tinmannsvik, R and Hovden, J (2003) 'Safety diagnosis criteria - development and testing', *Safety Science,* 41: 175-190.

Toft, B (1996) 'Limits to the mathematical modelling of disasters', in Hood, C and Jones, D (eds), *Accident and Design: Contemporary Debates in Risk Management*, UCL Press, London (pp 99-110).

Tofte et al (1998) *Arbejdspladsvurdering – hvordan og hvor langt?* Center for Alternativ Samfundsanalyse and Roskilde University, Copenhagen.

Torvatn, H (1997) *Factorer Som Fremmer Eller Hindrer Innförung av IK-Systemer i Mindre Bedrifter*, SINTEF, Institute of Social Research in Industry, Trondheim, Norway.

Vassie, L and Lucas, W (2001) 'An assessment of health and safety management within working groups in the UK manufacturing sector', *Journal of Safety Research*, 32: 479-490.

Victorian WorkCover Authority (2002) *SafetyMAP : Auditing Health and Safety Management Systems,* 4th edition, Victorian WorkCover Authority, Melbourne.

Vincoli, J (1994) *Basic Guide to Accident Investigation and Loss Control*, Van Nostrand Reinhold, New York.

Walker, D and Tait, R (2003) 'Health and safety management in small enterprises: an effective low cost approach', *Safety Science*, 301-318.

Walters, D (2001) *Health and Safety in Small Enterprises. European Strategies for Managing Improvement,* SALTSA – Joint Programme for Working Life research in Europe, PIE – Peter Lang SA, Brussels.

Walters, D (2002) *Regulating Health and Safety Management in the European Union: A Study of Dynamic Change*, Peter Lang, Brussells.

Walters, D and Frick, K (2000) 'Worker participation and the management of occupational health and safety: reinforcing or conflicting strategies?', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 43-65).

Walters, D and Jensen, PL (2000) 'The discourses and purposes behind the development of the EU Framework Directive', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 87-98).

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

Waring, A and Glendon, I (1998) *Managing Risk. Critical Issues for Survival and Success Into the 21st Century,* International Thomson Business Press, London.

Westerholm, P, Hasle, P and Fortuin, R (2000) ' Multidisciplinary health services as external agents of change', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 311-328).

Wokutch, R and VanSandt, C (2000) 'OHS management in the United States and Japan', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T, *Systematic Occupational Health and Safety Management. Perspectives on an International Development,* Pergamon, Amsterdam (pp 367-389).

Wooden, M and Vandenheuvel, A (1999) 'Is occupational health and safety good for business?' *Journal of Occupational Health and Safety - Australia and New Zealand*, 15(5): 411-416.

WorkCover Authority of NSW (2001) *An Occupational Health and Safety Model for Self-Insurers*, WorkCover Authority of NSW, Sydney.

WorkSafe Western Australia (1999) *WorkSafe Plan. Assessment of OHS Management Systems*, Worksafe Western Australia, Perth.

Zwetsloot, G (2000) "Developments and debates on OHSM system standardisation and certification', in Frick, K, Jensen, P, Quinlan, M and Wilthagen, T,

Systematic Occupational Health and Safety Management. Perspectives on an International Development, Pergamon, Amsterdam (pp 391-412).