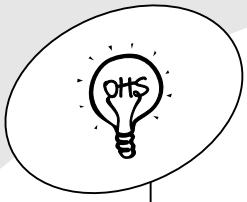

A report prepared for the National Occupational Health and Safety Commission

SAFE DESIGN PROJECT

Review of Occupational Health and Safety Legal Requirements for Designers, Manufacturers, Suppliers, Importers and Other Relevant Obligation Bearers

March 2000

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FOREWORD

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

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

NOHSC has five strategic objectives:

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

This publication is a contribution to achieving those objectives.

CONTENTS

PREFACE

A NATIONAL SOLUTIONS PROJECT

NOHSC initiated in 1998-99 five National Solutions projects as part of its strategic approach. The National Solutions projects are seen as providing key elements of a framework which will assist governments, employer and employee representatives and workplace players to better target their priorities and investments in prevention of occupational injury and disease. The framework aims at building OHS understanding within society and developing a systematic approach to sustainable change and OHS improvement.

This document is a Review of Occupational Health and Safety (OHS) Legal Requirements for Designers, Manufacturers, Suppliers, Importers and Other Relevant Obligation Bearers prepared for the following National Solutions project: ***Safe Design.***

This review of OHS legal requirements is one of a number of data and information gathering activities being undertaken in the first phase of the safe design project. It was commissioned to provide a consolidated resource and basis for understanding of the legal obligations, from an OHS perspective, of the key target groups. Gunningham & Associates P/L was commissioned in 1999 to carry out the review.

Professor Neil Gunningham is Director of the Australian Centre for Environmental Law in the Faculty of Law at the Australian National University, Canberra. Professor Gunningham is well known as the author of many publications in the area of OHS regulatory reform, policy and compliance. He also prepared the review of international occupational health and safety regulation for the 1995 Industry Commission Report on occupational health and safety in Australia. Professor Gunningham is co-author of the 1998 National Solutions' publication *On-the-spot Fines and the Prevention of Injury and Disease: The Experience in Australian Workplaces* and author of the 1998-1999 National Solutions' publication, *CEO and Supervisor Drivers: Review of Literature and Current Practice.*

Dr Richard Johnstone is an Associate Professor at the T C Beirne School of Law at the University of Queensland. He specialises in OHS law, particularly the criminal enforcement of OHS legislation. Dr Johnstone has written and published widely in the field of OHS. He recently co-authored *Regulating Workplace Safety: Systems and Sanctions* (with Gunningham). He has acted as a consultant to a variety of bodies including: the National Occupational Health and Safety Commission; the Australian Council of Trade Unions; the Industry Commission; Victorian Institute of Occupational Safety and Health; the Trade Union Training Authority; the Victorian and Queensland Occupational Health and Safety authorities.

Patricia Burritt has been a full-time member of the staff at the Australian Centre for Environmental Law in the Faculty of Law at the Australian National University since 1995, where she holds the position of Research Associate. She has worked on a large number of OHS and environment publications and projects including: *Regulating Workplace Safety: Systems and Sanctions* (by Gunningham and Johnstone); and *Smart Regulation: Designing Environmental Policy (*by Gunningham and Grabosky). Ms Burritt is a Barrister and Solicitor

and has a BA (Combined Honours) from the University of Lancaster, UK, and a LLB (Honours) from the ANU.

A reference group comprising representatives from OHS authorities from a number of States and Territories, ACCI and ACTU provided expert and industry advice and assistance to the project.

ABBREVIATIONS

OHS(CE)A (Cwlth)	Occupational Health and Safety (Commonwealth Employment) Act 1991 (Cwlth)
OHS(CE) (NS) Regs (Cwlth)	Occupational Health and Safety (Commonwealth Employment) (National Standards) Regulations 1994 (Cwlth)
OHSA (ACT)	Occupational Health and Safety Act 1989 (ACT)
OHS Regs (ACT)	Occupational Health and Safety Regulations 1989 (ACT)
OHSA (NSW)	Occupational Health and Safety Act 1983 (NSW)
OHS (HS) Reg (NSW)	Occupational Health and Safety (Hazardous Substances) 1996 Regulation (NSW)
WHA (NT)	Work Health Act 1986 (NT)
WH (OHS) Regs (NT)	Work Health (Occupational Health and Safety) Regulations 1992 (NT)
WHSA (Qld)	Workplace Health and Safety Act 1995 (Qld)
WHS Reg (Qld)	Workplace Health and Safety Regulation 1997 (Qld)
WHS(M) Reg (Qld)	Workplace Health and Safety (Miscellaneous) Regulation 1995 (Qld)
OHSWA (SA)	Occupational Health , Safety and Welfare Act 1986 (SA)
OHSW Regs (SA)	Occupational Health , Safety and Welfare Regulations 1995 (SA)
WHSA (Tas.)	Workplace Health and Safety Act 1995 (Tas.)
WHS Regs (Tas)	Workplace Health and Safety Regulations 1998 (Tas)
OHSA (Vic)	Occupational Health and Safety Act 1985 (Vic)
OHS (P) Regs (Vic)	Occupational Health and Safety (Plant) Regulations 1995 (Vic)
OSHA (WA)	Occupational Safety and Health Act 1984 (WA)
OSH Regs (WA)	Occupational Safety and Health Regulations 1996 (WA)
OSHA (USA)	Occupational Safety and Health Act 1970 (USA)
HSWA (UK)	Health and Safety at Work Etc Act 1974 (UK)

EXECUTIVE SUMMARY

Introduction and Background

This Report on OHS legal requirements (the 'Legal Review Report') focuses on three main types of legal requirements. First, it considers **legislation**: the mechanism that outlines the broad parameters that obligation bearers must follow. Second, it considers **regulations** that flesh out the general legislative duties and set out detailed requirements placed upon obligation bearers. Finally, it examines the **relevant case law**, the judicial decisions that clarify and resolve the inevitable ambiguities in both legislation and regulations, and which interpret judicially, key phrases in these legal instruments.

There is much to be learned from the experience of other countries, and those whose legal systems approximate to our own have by far the most to tell us. Consequently, for this Report, research on and findings about the international dimension has focused on the UK provisions because these resonate closely with those in Australia and reflect recent directives in the European Union, the European Union Directives because these represent crucial and up-to-date thinking within the European Community as a whole and, to a much lesser extent, selected North American provisions. The latter are not particularly illuminating, given that very little attention has been given to design considerations, a matter explicable in large part by the focus on product liability (rather than OHS) as the principal vehicle for addressing this issue.

Summary of Main Findings

A number of current trends are identified in this Report, comments are made on the overall implications of the findings for possible strategies for influencing the major upstream target groups and, finally, the Report also indicates likely changes in relevant statute law. There is such considerable overlap between these tasks that, to avoid duplication, they are dealt with together under four headings: (i) recent trends and initiatives; (ii) the role of process based standards; (iii) expanding the range of duty holders and design sectors; and (iv) enforcement and statutory terminology.

(i) Recent trends and initiatives

In general:

- There is support from stakeholders for performance-based regulation, for a greater focus on control at the design stage and for placing a duty on those who supply products to workplaces.
- Educating for safe design needs to be built into the total life cycle, educational processes of professionals and other potential obligation bearers.
- Legislation should be written in plain English so that the obligation bearers can understand their duties and responsibilities.

- There is the need to improve the amount of contact between industry and government bodies responsible for the legislation and regulation of OHS.

- The current approach for construction lacks uniformity across jurisdictions. If the development and adoption of a national approach for construction work is pursued it is highly likely that legislative provisions in the various jurisdictions will need to be remodelled in the future.

(ii) The role of process based standards

- There is a trend to replace outdated prescriptive regulations with broader based performance standards, in conjunction with process standards. This trend is apparent both within Australia (e.g. the National Standards on Plant and Hazardous Substances) and internationally (e.g. the *Process Safety Management Rule* (USA), the *Construction (Design and Management) Regulations* (UK), and the *Health and Safety Framework* and daughter Directives in the European Union). The most important characteristic of such measures is their approach to managing hazards by incorporating the three fundamental steps of hazard identification, risk assessment and risk control (underpinned by a series of either principle-based (i.e. general duties) or performance-based standards). Under the National Standards approach, and indeed under the legislation of individual jurisdictions, this trend is likely to continue.

- Regulators should recognise that process-based approaches are most appropriate when the desired OHS outcome cannot be clearly specified, and where there is evidence that the specified process will result in better OHS outcomes. There will, however, still be situations in which other types of OHS standards will be more appropriate, or at least should operate in tandem with process-based standards.

- Perhaps the greatest challenge for the 'next generation' of regulation is: (i) to integrate process-based standards into a full-blown organisational and systems-based approach, since it is only the latter which can provide a coherent strategy for addressing OHS in an entire enterprise or across an entire facility. This approach holds out the possibility of building in continuous improvement and cultural change within the organisation; and (ii) to integrate process safety management techniques (which focus on management systems) with the use of engineering design standards (which address equipment performance). This synthesis, by combining methodologies and approaches, will help enterprises achieve both safety and profitability goals. For example, by integrating design and operations, design engineers can benefit from the first-hand knowledge of operating personnel and vice versa.

(iii) Expanding the range of duty holders and design sectors

- While the current Australian OHS statutes impose duties on designers, suppliers, manufacturers and importers only in relation to plant and substances, it would appear that the broad general duties imposed upon employers and self-employed persons in relation to persons other than employees can be interpreted to impose duties upon consultants (contractors) supplying services and management systems to business organisations. This development would ensure that the obligations upon designers and suppliers are not confined to workplace 'hardware', but extend also to less tangible management systems that have just as much potential to give rise to worker ill-health. These developments need to be supported by more explicit provisions in the OHS statutes or regulations.

- There are unnecessary gaps in liability and a failure to address OHS across the entire life cycle of the article, substance or activity. These gaps include: franchisors; contractors and sub-contractors; distributors; retailers; advertisers; repairers; second-hand goods dealers; purchasers; auctioneers; and small business. In some instances these new duty holders can be readily identified as a sub-group of the existing duty holders (e.g. franchisors under employers to non-employees; contractors and sub-contractors under duty on employer/self-employed in relation to non-employees; and distributors and repairers might be suppliers in some cases). However, the definitions of supplier and manufacturer are unclear, and are generally limited to plant and substances, and not to services. In some jurisdictions there have been attempts to fill these gaps.

- Although a life cycle approach to identifying obligation bearers suggests that legislation may need to incorporate an expanded number of groups of obligation bearers, an alternative perspective suggests that safety problems should be completely designed out of products at the design phase. Quality management systems encourage a management philosophy that accepts the need for continual improvement in all of these aspects of safe design but, in particular, quality management emphasises the ideal of zero incidents related to unsafe design. The inference is that all aspects of unsafe design should be eliminated in a systematic, integrated way.

- An alternative approach to best practice OHS management explored is the use of hierarchy of control mechanisms to mitigate identified risks.

- Changes are necessary to expand the range of 'design sectors' covered particularly with regard to construction. Construction work presents particular problems in terms of safe design. Analysis of injuries associated with construction work has shown that the industry has many workplace hazards that are unique and are not catered for by other OHS legislation. In many cases there is a failure to adequately address the duties and responsibilities of persons involved in the various

stages of the life cycle of buildings and structures. Overall, construction and maintenance safety in the design stage of an industrial project is not widely practiced in Australia.

- The general duties imposed upon designers (except in WA) extend only to designers of plant, and not to designers of buildings and other types of construction work. Yet the way in which a building is designed may give rise to significant OHS risks to those who have to construct the building, and who maintain and clean it after construction. It is important, therefore, that the OHS statutes require designers of building and construction projects to take into account OHS concerns.

- It is noted above that safe design is the responsibility of designers (amongst others), but designers are not well defined in a systematic way in Australia as a group of obligation bearers. Unless individual groups of obligation bearers are well defined, the assessment of what are common obligations for all groups and what are specific obligations for individual groups will be misunderstood and/or misapplied. Any change in legislation could clarify the exact criteria for each target group.

- Existing statutes and regulations tend to confuse the roles of obligation bearers (e.g. a manufacturer does this, a supplier does that) when in fact the functions often overlap and are interchangeable. Similarly, an employer 'wears several hats' and may assume the function of a designer in the workplace when new plant and equipment is being modified, of a manufacturer, or of a supplier when selling plant second hand. It is the control of the design and design-associated activity that leads to a responsibility as an obligation bearer, not their classification as a manufacturer, supplier, etc. In short, consideration could be given to the identification of a set of risk-related activities or functions rather than focussing on obligation bearer groups.

(iv) Enforcement and statutory terminology

- The absence of a credible enforcement strategy is a matter for concern. Given the importance of the duties imposed on manufacturers, designers and others, and in particular the strategic role that these duties can play in removing workplace hazards at source, it is worth noting that very few prosecutions have been brought under the provisions of the Australian OHS statutes, although common law actions are somewhat more frequent.

- The term ‘when properly used’, which permeates most Australian statutes concerning design and manufacture of articles and substances, has no useful purpose and seriously conflicts with the more recent risk assessment approach. The probability and consequences of improper use are matters that should be included in any risk assessment.

- The failure to consistently implement the *National Standard for Plant* is causing confusion and may seriously threaten the effectiveness of the standard. It is recommended that all jurisdictions: agree to the principle of functional independence for design verification; agree to develop a list of comparable international design standards for plant acceptable in all jurisdictions; and agree that the requirement for documented risk assessment will be substituted for inspection by a competent person. For companies conducting business internationally ISO 9000 has become a worldwide quality *de facto* standard, over and beyond specific domestic regulatory requirements. Emphasis upon adoption of and compliance with international quality standards should be integrated into the standard development process, if serious attempts are going to be made to promote and encourage world's best practice.

PART I: INTRODUCTION

This Report provides a review of relevant occupational health and safety (OHS) literature, legislation, regulations and case law in order to provide a commentary on the legal landscape in Australia of a number of obligation bearers with responsibility for safe design.

The Report forms a part of the National Occupational Health & Safety Commission (NOHSC) Safe Design Project. The overall aim of that project is to develop a greater recognition of the role of safe design in improving OHS performance in the workplace. The identified principal target groups are:

- designers, manufacturers, suppliers, importers, erectors and installers of plant and equipment;
- designers, constructors, suppliers, erectors and installers of buildings and structures; and
- designers, manufacturers, suppliers and importers of substances.

The Project aims to influence these target groups so that they are actively addressing the application of safe design principles from an OHS perspective with the aim of achieving best design solutions which eliminate hazards in the workplace; actively incorporating continuous improvement processes in safe design; and actively promoting safe design principles to their members.

A key component of the Safe Design Project is the legal dimension, and in particular the legal requirements laid down by different jurisdictions in Australia. Legal requirements provide minimum standards that obligation bearers are required to comply with and indicate the minimum acceptable behaviour expected from obligation bearers. Compliance with legal requirements will usually be the most fundamental driver for all obligation bearers and as such, an understanding of legal obligations and trends and strategies for reform provide a necessary foundation for any exploration of broader strategies to enhance safe design.

Aspects of Legal Requirements Examined

This Report focuses on three main types of legal requirements. First, it considers legislation: the mechanism which outlines the broad parameters that obligation bearers must follow. Second, it considers regulations which flesh out the general legislative duties and set out detailed requirements placed upon obligation bearers. Finally, it examines the relevant case law: the judicial decisions which clarify and resolve the inevitable ambiguities in both legislation and regulations, and which interpret judicially, key phrases in these legal instruments. In addition, the courts have developed common law principles governing actions for damages for injuries and illness sustained from negligently designed or manufactured plant or substance.

The principal concern is with *Australian* legal provisions for safe design, and as such, Federal, State and Territory jurisdictions are all examined and compared. However, there may also be lessons to be learned from the legal requirements in overseas jurisdictions. Consequently, a limited examination of legislation, regulations and case law in the European Union, the United Kingdom, and North America is also undertaken and an analysis provided on similarities with and differences from legislation in Australian jurisdictions.

A life cycle notion of different obligation bearers

One other central question addressed in this Report is: who are the relevant duty holders? Designers, manufacturers, suppliers and importers are specifically identified in the tender document as main obligation bearers. The NOHSC Safe Design Project strategic framework also identifies constructors and installers as main obligation bearers and the roles of these groups is also explored. However, there might also be other, previously unidentified, obligation bearers whose roles also merit examination. In principle, target groups of obligation bearers could be found from any part of the life cycle for products targeted for examination. A range of situations exist where product design defects can occur. These range through unsafe design; careless production; improper labelling; improper packaging; and insufficient warning. Also, negligent advice and negligent performance of official duties (e.g. testing, hazard control and risk assessment) can lead to unsafe design. This means that parties responsible for supply, research and development, design, manufacture, distribution, installation, marketing, use, disposal, export and import, and logistics could all be the focus of examination.

In practice, a review of literature and statute law revealed that identification of target groups in legal instruments appears to be based on the selection of a few key groups, rather than the complete set of groups relating to safe design, use and disposal. The main set of obligation bearers given current recognition (in addition to employers and employees – the users) is:

- designers;
- manufacturers;
- suppliers;
- importers;
- installers and erectors;
- others – lessors, franchisors, contractors, distributors, retailers, advertisers, repairers, second-hand goods dealers, auctioneers and purchasers.

Despite the importance of the life cycle approach to effective OHS, a study by Booth (1993) showed that many businesses fail to develop appropriate policies and procedures to ensure that hazards are not introduced into workplaces through newly-purchased items of plant, machinery and equipment. If

work hazards are to be removed at source, it makes sense for OHS legislation to place obligations on *all* parties concerned with the work process (i.e. life cycle) to ensure that each party takes every practicable measure to make sure that all work processes, plant and substances are safe and without risks to health (Johnstone 1997:260).

Methodology

Three methods were used as a basis for identification, comparison and contrast of the legal responsibilities of safe design obligation bearers. First, a comprehensive literature review identified actual and potential obligation bearers, their responsibilities, and any controversial aspects of OHS statutes, regulations and case law that might identify a need for reform. Second, tabular classification of legislation and regulations by jurisdiction enabled comparison and analysis of the principle legal provisions. Finally, a series of telephone interviews with representatives of OHS authorities in Australia, the Australian Council of Trade Unions (ACTU) and the Australian Chamber of Commerce and Industry (ACCI) were used to confirm findings from the literature review and direct examination of legal instruments. In addition, the telephone interviews provided well informed opinions on the likelihood of forthcoming changes in statutes and possible strategies for influencing target groups.

Using these three methods, the project was completed in five stages**.**

Stage 1 - Literature review

The literature review involved a search for and collation of existing Australian and international archival material describing the legal responsibilities of obligation bearers in relation to plant and equipment, buildings and structures, and substances.

This stage entailed an exhaustive search of existing literature, and the use of electronic information networks to gather data. Routine searches included major online services and CD-ROM databases such as: CCH Electronic OHS Library; Worksafe Disc; OCLC First Search (covering collections such as the Social Sciences Index, Sociofile, and Worldcat); Current Contents; CARL Uncover; Legal Periodicals Index; and Austrom (including Agis and Apais). OHS specific databases on CD-ROM were also searched. These included: HSELINE; OSH CD and CISDOC (for UK and European material); NIOSHTIC and OSHA CD (for US sources); CSHCanada and MSDS (for Canadian sources).

Stages 2 & 3 - Analysis of domestic and international legislation regulations and case law

Once the relevant legislation and case law material had been accumulated, a detailed analysis of the differences between provisions in the various jurisdictions was conducted, their strength and

weaknesses analysed, and important overseas developments noted. Particular emphasis was placed on identifying ambiguities in current legislation, and considering ways in which legal obligations could be most effectively extended to cover a broader range of potential duty holders, and the policy implications of such changes for Australian jurisdictions. This component was conducted through desktop and library research.

Telephone interviews were held with members of each OHS jurisdiction in order to establish: (i) whether any new legislation was expected in the near future; (ii) whether any new strategies were likely to be introduced to encourage obligation bearers to comply with their legal duties; and (iii) whether there were any new classes of obligation bearers at present not covered by legislation.

Stages 4 & 5 - Completion of Draft and Final Reports.

A draft report was prepared which drew together the findings and conclusions of the previous stages into plain English format, with additional commentary which identifies current trends identified in the research, possible strategies for influencing target groups and likely changes in relevant statute law.

Comments and suggestions on the draft report received from members of the Safe Design Reference Group and contacts from jurisdictions not represented on the reference group have been incorporated into this final report.

PART II: THE CURRENT REGIME

This part of the Report examines the current legal responsibilities of target groups both in Australia and, to a lesser extent, internationally, as a necessary precursor to the evaluation which forms the subject matter of the final part of the Report.

Accordingly, Part II examines the various Australian and overseas OHS statutes and regulations followed by an analysis of relevant case law. First, each group of obligation bearers, major and minor, is identified and defined (in accordance with relevant legislation). Second, the main objects to which the legal requirements are addressed (hereafter referred to as 'design sectors') are described. These relate to: plant and equipment; buildings and structures; and substances. Third, and centrally, the Report describes, compares and contrasts legal responsibilities of obligation bearers in Australia, followed by a similar analysis for selected international jurisdictions. In each case common requirements and differences are highlighted.

Part III analyses the implications of the report findings in terms of strategies for influencing target groups, and makes some suggestions as to how relevant parties might be encouraged to meet their OHS legal obligations.

Who are the obligation bearers?

The overall aim of that project is to develop a greater recognition of the role of safe design in improving OHS performance in the workplace. The identified principal target groups are:

- designers, manufacturers, suppliers, importers, erectors and installers of plant and equipment:
- designers, constructors, suppliers, erectors and installers of buildings and structures; and
- designers, manufacturers, suppliers and importers of substances.

The project aims to influence these target groups so that they are actively addressing the application of safe design principles from an OHS perspective with the aim of achieving best design solutions which eliminate hazards in the workplace; actively incorporating continuous improvement processes in safe design; and actively promoting safe design principles to their members.

Main obligation bearers related to safe design of *plant and equipment* were defined in the brief as designers, manufacturers, suppliers and importers (see Table 1 below). Obligation bearers also identified from the literature review and through inspection of legislation in the different jurisdictions included erectors and installers. Other relevant categories of obligation bearers discovered included

lessors, contractors and sub-contractors. Employers and employees themselves are specifically excluded from this Report.

TABLE 1 – AUSTRALIAN JURISDICTIONS				
Obligation Bearers	**Plant & Equipment**	**Buildings & Structures**	**Substances**	**Business Systems**
Main- legislated	Designers Manufacturers Suppliers Importers	Designers Manufacturers Suppliers Importers	Designers Manufacturers Suppliers Importers	Nil
Other- legislated	Erectors Installers Lessors	Erectors Installers		Nil
Other- not legislated	(i) Contractors and sub-contractors (including consultants) (ii) Other (e.g. distributors, retailers, advertisers, repairers, second-hand goods dealers, auctioneers, purchasers)	(i) Contractors and sub-contractors (including consultants) (ii) Other (e.g. distributors, retailers, advertisers, repairers, second-hand goods dealers, purchasers, auctioneers)	(i) Contractors and sub-contractors (including consultants) (ii) Other (e.g. distributors, retailers, advertisers, purchasers)	(i) Contractors and sub-contractor (including consultants) (ii) Employers or the self-employed person (franchisors)

A similar list of main obligation bearers is listed in the brief related to safe design of *buildings and structures* (see Table 1 above). In NOHSC's Safe Design Project Strategic Framework document, reference is made to designers, constructors and installers of buildings as the principal target audiences. Examination of the relevant literature and associated legislation revealed that the following groups should be considered as being main obligation bearers – designers, manufacturers, suppliers, importers, and erectors and installers. Once again, other relevant obligation bearers included contractors and sub-contractors.

Finally, the main obligation bearers for safe design of *substances* were also specified in the brief as being designers, manufacturers, suppliers, and importers (see Table 1 above). A literature review and

examination of legislation confirmed this to be the case. Erectors and installers were not relevant to the substances category. Other obligation bearers for substances include distributors, retailers, advertisers and purchasers.

This study identified a fourth, additional, category of design activity – the design and supply of business systems. For example, in a 'business format franchise' an organisation (the licensor or franchisor) develops a system of doing business, and, under a licence arrangement, permits the licensee or franchisee to use that business system, and relevant trade marks and trade names, in the operation of the licensee/franchisee's independently owned business, while requiring the licensee/franchisee closely to follow methods developed and specified by the licensor/franchisor. This study outlines the OHS obligations on the designers and suppliers of business systems – franchisors.

The following main obligation bearers are identifiable in Australian legislation and regulations – designers, manufacturers suppliers, importers, erectors and installers, and lessors. Several of the main obligation bearer groups are not defined in OHS legislation and regulations. A comprehensive review of the OHS statutes located the following definitions:

Designers

Person who designs plant or structures, or who is responsible for the design of plant or structures (OHSW Regs (SA) 1.1.5(1))
Person who designs, or is responsible for the design of, plant used or intended to be used in a workplace (WHS Regs (Tas) Sch 1)

The Australian OHS legislation tends to impose two different types of obligations upon designers (and, indeed, on manufacturers, suppliers and importers) – a statutory general duty, and a more detailed standard in the various plant regulations.

The general duty provisions in the OHS statutes impose duties on obligation bearers to ensure that *plant and equipment* is designed, tested and information provided so as to ensure, as far as is reasonably practicable, that it is safe and without risks to health. These general duties are expressed in terms of a duty of care, tend not to make it clear to whom the duty is owed, and are usually qualified by the expression 'when properly used'. Even when a person is not a professional designer they may assume the role and subsequently the duties of a designer.

Regulations made under each of the OHS statutes covering plant, and implementing the NOHSC National Standard for Plant, tend to impose a different type of duty (a risk assessment requirement) upon designers, require designers to pass on information about the design of the plant to parties further

down the production and distribution line, and (with the exception of the WA Regulations ss 4.23 and 4.28) do not qualify the duty with the expression 'when properly used'.

The legal responsibility and duties of a designer of *buildings and of the erection of structures* are outlined comprehensively in the WA legislation (see OHSA (WA) s 23(3a) 1995 Amendment), in the South Australian OHS legislation (see OHSWA (SA)), and only to a lesser extent in the OHS legislation of the other jurisdictions. Under the South Australian OHS Statute (23A(1)), the designer is required to: ' (a) ensure so far as is reasonably practicable that the building is designed so that people who might work in, on or about the workplace are, in doing so, safe from injury and risks to health; and (b) ensure that the building complies in all respects with prescribed requirements (if any) applicable to it'. At section 24(2a) '(a) the person who designs the structure must ensure so far as is reasonable practicable that the structure is designed so that the persons who are required to erect it are, in doing so, safe from injury and risk to health'.

In terms of the designers' obligations to ensure OHS in the *use of substances* in the workplace, the New South Wales OHS statutory provisions (OHSA (NSW) s 18(1)) outline the duty for the designer to ensure that the substance is safe and without risks to health when properly used and to provide, or arrange for the provision of, adequate information about the substance to the persons to whom it is supplied to ensure its safe use. The Northern Territory statutory provisions outline this duty in greater detail (WHA (NT) s 30B(1)). The designer of any substance for the workplace is required to ensure that: the characteristics of the substance are such that a person who properly uses the substance is not exposed to hazards in doing so; testing and examination of the substance has been undertaken; and that adequate information is available on supply of the substance in respect of any danger associated with the substance, its specifications and data obtained at testing, and the conditions necessary to ensure safe use in the workplace.

Manufacturers

Person who manufactures plant, structures, materials for the purpose of a structure, or substances (OHSW Regs (SA) 1.1.5(1))
Person who manufactures plant, structures, materials used for a structure or substances used or intended to be used in a workplace (WHS Regs (Tas) Sch 1)

Once again, under the OHS statutes, manufacturers tend to have general duties to design safely, to test and provide information. Under the Plant Regulation manufacturers have a legal responsibility to follow a designer's specifications precisely in order to ensure the plant is as free from risk as the designer intended. Under some conditions, for example, if the designer is located outside Australia, the manufacturer takes on the designer's responsibility to make sure the risks associated with design are

assessed and controlled. The manufacturer also has a responsibility to provide particular kinds of safety information to the users of the plant. The manufacturer is obliged to provide safety information about the plant to end users – either directly (if supply is direct) or through the supplier. This will generally be in the form of an operating or instruction manual, either provided by the designer, the manufacturer or jointly. The manufacturer should review and reissue safety documentation whenever new information becomes available about the use of an item or any associated system of work likely to affect health and safety. The manufacturer should also notify owners and users if design or manufacturing faults become apparent after supply. The nature of the fault, risk posed, or action necessary to remove a design risk should be indicated and the item recalled if the fault is impossible to rectify at the workplace (NOHSC 1995).

The South Australian OHS Statute provided a section in regard to the duties of manufacturers during the erection of a structure (OHSWA (SA) s 24(2a)(b)): ‘a person who manufactures any materials to be used for the purpose of the structure must ensure so far as is reasonably practicable that the materials are manufactured so that the persons who are required to erect the structure are, in using, handling or otherwise dealing with the materials, safe from injury and risks to health’.

Similarly, manufacturers and importers have clear obligations to ensure safety and testing, provide appropriate information and prevent unsafe use of substances for use in the workplace (see, for example, WHSA (Qld) s 34; OHSA (NSW) s18(1); OHSA (SA) s 24(3); and WHS (NT) s 30B(1)).

Suppliers

In relation to any plant or substance, means supply the plant or substance by way of sale, lease or hire, whether as principal or agent (WHSA (Tas) s 3(1))
In relation to any plant or substance, includes supply and resupply by way of sale, exchange, lease, hire or hire-purchase, whether as principal or agent (OSHA (WA) s 3(1))
In relation to plant, structures or materials for structures – (supplier) means a person who supplies plant or materials by way of sale, lease, exchange or hire, whether as a principal or agent, and includes an importer, wholesaler, distributor and retailer. In relation to a substance – (supplier) means a manufacturer, importer, wholesaler or distributor of the substance, but does not include a retailer (OHSW Regs (SA) 1.1.5(1))
In relation to a substance used at a workplace, means a person who imports, manufactures, wholesales or distributes the substance, but does not include a retailer (WH(OHS) Regs (NT) 2(2))
In relation to a hazardous substance includes – a wholesaler, distributor, warehouse operator or other person who supplies the substance; and a person who manufactures or imports the substance (OSH Regs (WA) 5.1(1)
In relation to: (a) plant, structures or materials for structures – means a person who supplies plant or materials, by way of sale, lease, exchange or hire, whether as a principal or agent; and an importer, wholesaler, distributor or retailer of plant, structures or materials; and (b) a substance – means a manufacturer, importer, wholesaler, distributor or retailer of the substance (WHS Regs (Tas) Sch 1)
In relation to plant, structures or materials for structures – means a person who supplies plant or materials, by way of sale, lease, exchange or hire, whether as a principal or agent; and an importer, wholesaler, distributor and retailer of plant, structures or materials; and In relation to a substance – means a manufacturer, importer, wholesaler or distributor or retailer of the substance (WHS Regs (Tas) Sch 1)

As Wright points out (1997:94), 'supply' essentially involves a commercial transaction (as opposed to a gift or friendly loan), and the legislation generally categorises the transactions as sale, lease, hire, hire-purchase and exchange. It seems logical that an importer is a sub-category of a supplier - i.e. an importer is a supplier who supplies across jurisdictional boundaries (some of the definitions from the legislation above expressly provide that a supplier includes an importer), although it is arguable (see Brooks (1993)), under the NSW commentary, at least that if Parliament uses the terms 'supplier' and 'importer' it is intended that they have mutually exclusive meanings (i.e. a supplier must be based within the jurisdiction, an importer is based outside the jurisdiction). The OHS statutes have overlapping duties – this is common - and therefore, unless the wording and context of the OHS Act

indicates to the contrary, an importer can also be a supplier. A manufacturer may also be a supplier, of course, if the manufacturer supplies to another that which it has already manufactured.

Suppliers with a general duty under the OHS statutes and under the Plant Regulations are legally responsible for making sure the risks to health and safety from the plant that they supply are eliminated or minimised. For new plant the supplier must provide the purchaser with the health and safety information provided by the designer or manufacturer. For used plant any available health and safety information originally provided by the designer and manufacturer as well as any records kept by the previous owner must be provided. Material accompanying imported items may need revision to ensure clarity and effectiveness in the eyes of the reader (NOHSC 1995).

Under the South Australian OHS Statute suppliers of materials to be used for the purposes of a structure in the workplace must ensure that the materials are in such a state as to be safe to any person required to use, handle or otherwise deal with the materials.

The legal responsibilities and duties of a supplier of a substance to the workplace are detailed in the Commonwealth OHS Statute (OHS(CE)A (Cwlth) s 19). The supplier is required to:

- ensure that the substance, at the time of supply, is safe for use and without risk to health of employees;
- have carried out, or caused to have carried out, adequate research, testing, and examination of the substance to assess risk to health and safety in the workplace; and
- make available to the employer adequate information about the condition of the substance at time of supply, risks likely unless properly used, steps to be taken to avoid risk, and the first aid and medical procedures.

Importers

Person who imports plant, structures, materials for structures, or substances (OHSW Regs (SA) 1.1.5(1))
Person who imports an article or substance (WHS Regs (Tas) Sch 1)

According to the national standard, an importer of plant takes on the responsibility of designer and manufacturer and supplier to ensure the risks associated with the plant are assessed and controlled, and to provide the required safety information to users. Commonwealth and some State and Territory legislation classifies plant as imported if it is from outside the jurisdiction – not just from outside Australia.

Erectors and Installers

Erector: Person who erects, dismantles or alters a structure, or the structure of plant (OHSW Regs (SA) 1.1.5(1))
Installer: Person who installs plant or structures (OHSW Regs (SA) 1.1.5(1))

Erectors and installers of plant have a responsibility to ensure their activities are undertaken as safely as possible and with designer and/or manufacturer's instructions and to any relevant standard. A risk management process to identify hazards should be undertaken (NOHSC 1995). The South Australian OHS Statute (OHSWA (SA) s 24(2)) requires that a person who erects, installs or modifies a plant ensure, so far as is reasonably practicable, that it will be safe when properly used and maintained, and when subjected to reasonably foreseeable forms of misuse. At section 24(2a)(d) the erector of a structure has a duty to ensure that the structure is safe during the course of its erection and subsequent use.

Lessors (and hirers)

Leasing is separately identified as a situation where obligations apply under the New South Wales OHS Statute. OHSA (NSW) section 18(2) specifies that the obligations under this section 'extend to the supply of the plant or substance by way of sale, transfer, lease or hire and whether as principal or agent.' In Western Australia (OSH Regs (WA) 4.35(1)) a person who supplies plant for use at a workplace by way of hiring or leasing the plant must ensure that: the plant is inspected between periods of hire or lease; assessed to determine whether the plant requires testing; and that the testing is undertaken if necessary – to reduce risk of injury or harm to persons properly installing, or erecting, commissioning or using the plant in the workplace.

Other obligation bearers

As noted above, the potential target groups are much broader than those identifiable in current legislation. In principle, three other groups of obligation bearers can be identified:

(i) **Franchisors.** The increasing use of licensing and franchising arrangements means that business organisations are designing and closely controlling the business operations of those operating under licence, and imposing detailed requirements restricting the types of suppliers and contractors with whom the licensee may contract. It is argued that, at least in Victoria and Queensland (NOHSC 1999:ch 2), franchisors owe a duty to ensure that in business systems the subject of the franchise arrangement is designed so as to be, as far as is reasonable practicable, safe and without risk to health.

(ii) **Contractors and sub-contractors (including consultants).** Often injury to an employee may result from an employer's adoption of a work system designed by a consultant, or an employee may use certain substances or machines in production because of advice from a consultant or expert. Product liability will not catch the consultant as no tangible product has been supplied. However, the advice, if negligent, may create a liability if the consultant could foresee that the subject-matter of the advice could, if incorrect, result in harm to employees of the receiver of the advice. The adviser has an obligation to take care that the advice is appropriate, and will not, if followed, endanger health and safety of employees (Brooks 1993: 244). The general duties owed by employers and self-employed persons to persons other than employees under the various OHS statutes would place obligations on contractors to ensure that they had OHS foremost in their minds when designing work systems.

(iii) **Others (e..g. distributors, retailers, advertisers, repairers, second-hand goods dealers, purchasers, auctioneers, and small business).** A range of other obligation bearers is suggested in the literature. A number of special circumstances for some of these groups are discussed below.

Purchasers. Booth (1993: 66) suggests that good OHS purchasing practices should assist purchasers to vet a manufacturer's performance with regard to their product and OHS concerns. This would require an appropriate assessment of a potential purchase before any item is bought. Booth indicates that the awareness and expertise of the purchaser should be a significant factor here. The Australian OHS statutes generally do not make specific references to the activities and responsibilities of 'purchasers' or 'purchasing'.

Second-hand dealers/auctioneers. The activities of second-hand dealers/auctioneers should also be considered in respect to their role as suppliers of items for the workplace. As suppliers, this group is responsible for providing appropriate information from the manufacturer about the item to be supplied to the client, and subsequently to the employee. Whether such information is readily available to the dealer or auctioneer, and how much information is appropriate, is in question. Similarly, the risk assessment of the item to be supplied, to be undertaken by a supplier, may be an impracticable and difficult requirement for a dealer or auctioneer. (Interview with Jean Foster, Workplace Services, Department for Administrative and Information Services (South Australia) 5.8.99)

Remote locations. There is often a lack of available information for people in remote areas where certain specialist skills and services are not available and where redesign and alteration could be undertaken in ignorance of the legal responsibilities which they are adopting under the OHS legislation. (Interview with Tom Heron, Division of Workplace Health and Safety (Queensland) 4.8.99).

Small business. Many of the duties and responsibilities under discussion in this report are imposed upon the employers/owners and staff of small business. The need here is for appropriate,

simply expressed information for a group who are often too busy, and undertake too many different tasks, to be fully aware of the range of the duties and responsibilities which they adopt under the OHS legislation. (Interview with Brett Young, Work Health Group (Northern Territory) 4.8.99)

Design sectors

Four main design sectors examined in this report include plant and equipment, buildings and structures, substances and business systems. Definitions of plant and equipment and substances are included in legislation and regulations. These definitions are outlined below. However, no detailed or specific definitions of buildings and structures appear in the OHS legislation (other than in the WA OSH Regs 1.3), although they are usually defined in other legislation for the construction industry.

Plant and Equipment

Plant includes all machinery and equipment (including scaffolding), both stationary and mobile, tools and implements used in the workplace. Plant that is regulated under health and safety legislation does not only include heavy industrial plant used in manufacturing and construction environments. It also includes plant used for entertainment (such as amusement park rides), medical equipment, and office machinery and equipment (such as photocopiers and paper guillotines). In some States and Territories the definition also includes manual tools such as hammers and knives (NOHSC 1995). The following chart outlines the definition of plant in each of the OHS statutes.

Includes any machinery, equipment or tool, and any component thereof (OHS(CE)A (Cwlth)s 5(1))
Includes any machinery, equipment or tool and any component thereof or accessory thereto (OHSA (ACT) s 5(1))
Includes any machinery, equipment and appliance (OHSA (NSW) s 4(1))
Includes machinery, pressure vessels, appliances, implements, scaffolding and tools, any component thereof and anything fitted, connected or appurtenant thereto (WHA (NT) s 3(1))
Includes machinery, equipment, appliance, pressure vessel, implement and tool; and personal protective equipment; and a component of plant and a fitting, connection, accessory or adjunct to plant (WHS (Qld) Sch 3)
Any machinery, equipment, appliance, implement or tool (OHSWA (SA) s 4(1))
Includes any machinery, equipment, scaffolding, amusement structure, appliance, implement or tool and any component or fitting of any of those things (WHS (Tas) s 3(2))
Includes any machinery, equipment, appliance implement or tool, any component thereof and anything fitted, connected or appurtenant thereto (OHSA (Vic) s 4)
Includes any machinery, equipment, appliance, implement, or tool and any component or fitting thereof or accessory thereto (OSHA (WA) s 3(1))

In general, definitions in the plant regulations are narrower than the definition of 'plant' in the OHS statutes. For example, the Victorian *Occupational Health and Safety (Plant) Regulations* define 'plant' more narrowly than the *Occupational Health and Safety Act* 1985 definition in section 4 (see above).

Regulation 106(1) of the Victorian *Plant Regulations* specifies that the *Plant Regulations* only apply to the following types of plant:

(a) subject to sub-regulation (3), plant that processes material, by way of a mechanical action, which—

(i) cuts, drills, punches or grinds the material; or

(ii) presses, forms, hammers, joins or moulds the material; or

(iii) combines, mixes, sorts, packages, assembles, knits or weaves the material -

including plant where the functions set out in paragraphs (i), (ii) and (iii) are incidental to the main purpose of the plant; and

(b) subject to sub-regulation (3), plant that lifts or moves people or materials (other than a ship, boat, aircraft or, except as provided in sub-regulation (4), a vehicle designed to be used primarily as a means of transport on a public road or rail); and

(c) pressure equipment; and

(d) tractors; and

(e) earthmoving machinery; and

(f) lasers; and

(g) scaffolds; and

(h) temporary access equipment; and

(i) explosive-powered tools; and

(j) turbines; and

(k) amusement structures.

(2) Unless specified otherwise, these Regulations apply to all plant irrespective of the date on which the plant was manufactured.

(3) Sub-regulations (1)(a) and (1)(b) do not include—

(a) plant which relies exclusively on manual power for its operation; or

(b) plant which is designed to be primarily supported by hand.

Regulation 107 of the *Plant Regulations* vests the Victorian WorkCover Authority with a very broad power to exempt specific plant or a class or type of plant or any person from any requirement or prohibition in these regulations.

Buildings and Structures

Buildings and structures are not defined in any detail in the principal OHS legislation (with the exception of the WA OSH Act s 23(3a)). Definitions can be found in other legislation on building and construction work and are detailed below. Activity in the 'building and construction industry' can mean 'that part of industry involved in the construction, erection, installation, addition to, alteration, repair, maintenance, cleaning, painting, renewal, removal, dismantling or demolition of a building or other structure; or the digging or filling of a structure; or concreting, bricklaying or tiling; or any part of industry involved in activities normally regarded as building or construction' (WHS Reg (Qld) Sch 9). All buildings must comply with the requirements of the local municipality. Building controls concerned with the building (as opposed to its amenity with its environment) is imposed by statute in the relevant State or Territory, and by the building regulations made under that statute. There are two forms of statutory control - planning legislation requiring a permit from the responsible local authority before work can commence, and building control standards which adopt the Building Code of Australia 1990 (see below). These are administered by the building inspector/surveyor of the local municipality or shire.

'Building' includes – (a) a structure upon or attached to land; (b) an addition to a building; (c) a structure attached to a building; and (d) a part of a building (*Building Act* 1972 (ACT) s 5)
'Building'includes part of a building or a building under construction (OHS(CE)(NS) Regs (Cwlth) 10.01(1))
'Building' includes part of a building (OHSW Regs (SA) Div 1.1)
'Building' includes any erection, edifice, wall, plant, chimney, fence, bridge, wharf, jetty, ship or floating structure (WHS Regs (Tas) Sch 1)
'Building' includes a structure, and includes part of a building or structure (*Construction Safety Regulations (NSW)* 1950 Reg 84)
'Structure' includes a fence, retaining wall, swimming pool, ornamental pond, mast, antenna, aerial, advertising device, notice or sign (*Building Act* 1972 (ACT) s 5)
'Structure' includes part of a structure (OHS(CE)(NS) Regs (Cwlth) 10.01(1))
'Structure' includes part of a structure (OHSW Regs (SA) Div 1.1)

Substances

Once again each of the OHS statutes, and the hazardous substances regulations made under each of the OHS statutes, contain a definition of 'substances'. The definitions in the OHS statutes are as follows:

Any natural or artificial substance, whether in solid or liquid form or in the form of a gas or vapour (OHSA (NSW) s 4(2)); and WHSA (Qld) Sch 3)
Natural or artificial substance, whether in solid, liquid, gas or vapour form (WHA (NT) s 3(1))
Natural or artificial substance, whether in solid or liquid form or in the form of a gas or a vapour (WHSA (Tas) s 3(1)).
Natural or artificial substance, whether in solid or liquid form or in the form of a gas or a vapour (OHSA (Vic) s 4).
'Substance': (a) includes a chemical entity, composite material, mixture or formulation ; and (b) does not include an article (OHS(CE)(NS) Regs (Cwlth) 6.03)
'Substance' does *not* include a thing (other than a fluid or particle) – (a) formed during production to a predetermined design or shape or to have a predetermined surface; and (b) used for a purpose depending completely or partly on its design, shape or surface; and (c) keeping its chemical composition and physical state during use (WHS Reg (Qld) Sch 9)
Means any natural or artificial entity, composite material, mixture or formulation, other than an article (OSH Regs (WA) 5.1(1)
Includes a chemical entity, composite material, mixture or formulation, but does not include an article (OHSW Regs (SA) 4.1.3)
Natural or artificial entity, composite material, mixture or formulation, other than an article (OHS(HS) Reg (NSW) Sch 3)

Responsibilities of designers, manufacturers, suppliers and importers under the OHS statutes and regulations

Legislated and regulated responsibilities are examined in respect of three main design sectors – plant and equipment; buildings and structures; and substances. Thereafter the Report outlines the application of other duties in the OHS statutes to designers of management and business systems.

In general, only the OHS statutes and the regulations made under those statutes impose legal obligations upon duty holders. Guidance as to measures which might be taken to comply with those obligations might be found in a range of material, which might include approved codes of practice (advisory standards in Queensland) made under the OHS statute, NOHSC standards, guidance notes issued by the OHS regulator, standards issues by industry associations, and Australian standards. Unless these documents are incorporated by reference into a regulation, they have no legal impact,

other than to provide evidence of what a reasonable duty holder would do to comply with the legal obligation for which the document provides guidance. In effect, they provide evidence of what the duty holder should have known about the hazard, and the measures available to remove the hazard.

Most of the OHS statutes make provision for the effect of approved codes of practice (advisory standards in Queensland). In general, the Commonwealth, Victorian, South Australian, Tasmanian, and Northern Territory Acts provide that where it can be shown that a duty holder has not followed the provisions of a relevant code of practice, the duty holder is considered to have breached the duty unless she or he can show that they took another measure which was the equal of, or better than, the measures set out in the code. In New South Wales, Western Australia and the ACT an approved code can be used as evidence of what a reasonable duty holder would have done to comply. The duty holder can always show that she or he adopted a measure that was as good as the measure set out in the code. In the WHSA(Qld), sections 26 and 37 provide that when there is in force a regulation covering the risk, it must be followed to comply with the general duty. A person must follow relevant advisory standards; or adopt another method that identifies and manages exposure to risk. Where there is no guidance in the regulations or advisory standard, the person must take reasonable precautions and exercise proper diligence to ensure the obligation is discharged. It is a defence for the duty holder to show (on the balance of probabilities) that she or he followed the relevant regulation or advisory standard, or, where there is no regulation or advisory standard about exposure to a risk, that she or he chose any appropriate way and took reasonable precautions and exercised proper diligence to prevent the contravention.

Plant & Equipment

The obligations imposed upon designers, manufacturers, suppliers, importers, installers and erectors of plant and equipment are to be found in the general duty provisions under the various Australian OHS statutes, and in the plant regulations made by each jurisdiction to implement the NOHSC National Standard for Plant.

TABLE 2 (LEGISLATION): THE DUTIES ON PERSONS OUTSIDE THE WORKPLACE TO ENSURE THAT PLANT AND EQUIPMENT IS SAFE AND WITHOUT RISK TO HEALTH									
	CWLTH	**ACT**	**NSW**	**NT**	**QLD**	**SA**	**TAS**	**VICT**	**WA**
1(a) Safe & without risk to health when properly used	OHS(CE)A (Cwlth) ss 18(1) and 20 OHS(CE)(NS) Regs (Cwlth) 4.05	OHSA (ACT) ss 32(1) and 34	OHSA (NSW) ss 18(1) and 18(3)	WHA (NT) ss 30B(1) and 30B(2) WH(OHS) Regs (NT) 9-12	WHSA (Qld) ss 32(1); 32(2); and 33	OHSWA (SA) ss 24(1) and 24(2) OHSW Regs (SA) 3	WHSA (Tas) ss 14(1); 14(3); and 49	OHSA (Vic) ss 24(1); 24(2); and *Equipment (Public Safety) Act 1994* s 8 OHS(P)Regs304-6; 401-2; 503; & 603	OSHA (WA) ss 23(1) and 23(2) OSH Regs (WA) 4.23-6 and 4.35
Obligation Bearers 1 (a)	M S I E	M S I E	D M S E	D M S I E	D M I E	D M S I E	D M S I E	D M S I E	D M S I L
1(b) Carry out research, testing, & examination to discover	OHS(CE)A (Cwlth) s 18(1)	OHSA (ACT) ss 32(1); 35(2); and 33(1)		WHA (NT) s 30B(1)	WHSA (Qld) s 32(3)	OHSWA (SA) s 24(1)		OHSA (Vic) s 24(1)	OSHA (WA) s 23(1)
1(b) Eliminate or minimise risk during use	OHS(CE)(NS) Regs (Cwlth) 4.04-5 and 4.07-8			WH(OHS) Regs (NT) 85-6	WHSA (Qld) s 32(3)	OHSW Regs (SA) 3		OHS(P)Regs301-3; 403; 603; & 605	
Obligation Bearers 1 (b)	M S I	M S I		D M S I	D M I	D M S I		D M S I	D M S I
1(c) No requirement to repeat any research where reasonable to rely on results/ information supplied	OHS(CE)A (Cwlth) s 22(3) OHS(CE)(NS) Regs(Cwlth)4.04-10	OHSA(ACT) s 35(1) and (2)							
Obligation Bearers 1 (c)	M S I E	M S I							

D = Designer; M = Manufacturer; A = Advertiser; S = Supplier; I = Importer; L = Lessor; E = Erector/Installer.

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1(d) Erection and installation undertaken according to: approved codes of practice; information supplied by manufacturer/supplier; and where it was reasonable to rely on information provided	OHS(CE)A (Cwlth) s 22(2) OHS(CE)(NS) Regs(Cwlth)4.09-10	OHSA (ACT) s 35(3)		WH(OHS) Regs (NT) 87		OHSW Regs (SA) 3			OSH Regs (WA) 4.27
Obligation Bearers 1 (d)	E	E		E		E			E
1(e) Make available to employer adequate information concerning: use; design, construction, & composition; and conditions of use	OHS(CE)A (Cwlth) s 18(1) OHS(CE)(NS) Regs(Cwlth)4.06; 4.08; and 4.52	OHSA (ACT) ss 32(1) and 33(1)	OHSA (NSW) s 18(1)	WHA (NT) s 30B(1) WH (OHS) Reg (NT) 84-5; and 88	WHSA (Qld) s 32(4) and (5) WHS Reg (Qld) Part 2 s 16	OHSWA (SA) s 24(1) OHSW Regs (SA) 3	WHSA (Tas) s 14(1) WHS Regs (Tas) 96-103	OHSA (Vic) s 24(1) OHS(P)Regs304; 307-8; 402; 404-5; 503; 604-5; & Part 10	OSHA (WA) s 23(1) OSH Regs (WA) 4.2; 4.30-33; 4.35
Obligation Bearers 1 (e)	M S I	M S I	D M S E	D M S I	D M S I	D M S I	D M S I	D M S I	D M S I
1(f) Duty lies with third person (supplier) and not finance provider	OHS(CE)A (Cwlth) s 19(2)	OHSA (ACT) s 33(2)	OHSA (NSW) s 18(2)						
Obligation Bearers 1 (f)	S	S	S						
1(g) Provisions only apply: in the course of trade, business or other undertakings; and whether or not exclusively for use at work			OHSA (NSW) s 18(2)						
Obligation Bearers 1 (g)			D M S L E						

D = Designer; M = Manufacturer; A = Advertiser; S = Supplier; I = Importer; L = Lessor; E = Erector/Installer.

Table 2 above provides a summary of the general duty obligations placed upon designers, manufacturers, suppliers, importers, erectors and installers of plant and equipment in each of the Australian OHS statutes. These duties are supplemented by the detailed provisions in the various regulations covering plant.

The general duty provisions tend to place obligation holders under a duty of care which obliges them to ensure, so far as is reasonably practicable, that the items supplied for use in the workplace will be '*safe and without risks to health when properly used*' (a critique of this provision, is provided later in this Report).

The plant regulations provide further detail of the steps required to discharge the broad general duty, and require duty holders to engage in a process of risk assessment and control:

a) undertake a process of *identifying* hazards associated with plant;

b) *assess* the risks which have been identified in relation to those hazards, taking into account certain prescribed matters; and

c) *control* risks associated with plant, generally without describing *how* this must be done. Instead of the word 'control' the WA Regulations require duty holders to '*consider* whether the risk may be reduced…' (WA OSH Regulations 4.23 to 4.29 of Part 4).

The regulations tend not to use the expression 'when properly used' (with the exception of the WA OSH Regulations ss 4.23 and 4.28).

The plant regulations in the different Australian jurisdictions implement the National Standard for Plant, developed as part of the National Uniformity process in the mid-1990s under the auspices of NOHSC. In NSW, a draft Occupational Health and Safety Regulation, which includes provisions based on the National Standard for Plant, is expected to commence in 2000. To facilitate discussion of the various plant regulations, a brief outline of the National Standard for Plant is provided here.

The National Standard for Plant marks a significant change in approach from prescriptive regulation of plant towards process-based and performance-based approaches. It establishes hazard identification, risk assessment and risk control processes for all types of plant. Provisions apply to design, manufacture and supply of plant and its use in the workplace (NOHSC 1997). Performance requirements (performance standards) are also specified with respect to the testing, installation, commissioning, repair, alteration, dismantling, storage and disposal of plant. Corresponding duties have been placed on relevant persons with responsibilities in relation to plant and associated systems of work in a workplace, or to plant intended to be used in a workplace. Records must be kept of testing done, maintenance carried out, inspections conducted, any commissioning or any alterations carried out for the specified types of plant (NOHSC 1997). Obligation bearers are defined to include those

related to all stages of the plant's life cycle – designers, manufacturers, importers, suppliers, installers and erectors, and owners of plant.

As noted above, the National Standard for Plant has been adopted by the Australian jurisdictions in regulations and codes. For example, Regulations 302 and 303 of the Victorian Plant Regulations provide as follows:

> *302 Designer's duty to undertake hazard identification*
>
> A designer of plant must ensure that all hazards associated with the use of plant are identified during the design of the plant, having regard to the state of the knowledge of the hazards.
>
> *303 Designer's duty to undertake risk assessment*
>
> (1) If a hazard is identified under Regulation 302, a designer must ensure that an assessment is made to determine whether there is any risk associated with the hazard.
>
> (2) Without limiting sub-regulation (1), the designer must ensure that the risk assessment takes into account –
>
> (a) any risk factors associated with the use of plant and, so far as is practicable, risk factors associated with the use of plant which are specific to the workplace in which the plant is to be used;
>
> (b) the range of environmental and operational conditions in which the plant is intended to be used; and
>
> (c) any ergonomic consideration in relation to people who may use the plant.
>
> (3) If the design of plant is required to be notified in accordance with Regulation 1001 and a risk assessment has been conducted under sub-regulation (1), the designer of the plant must ensure that –
>
> (a) the method used to undertake the risk assessment required under this regulation; and
>
> (b) the results of the risk assessment are recorded and retained, in a suitable state for examination, for 10 years.

The Victorian Plant Regulations require parties to pass on information about the design and manufacture of the plant to parties further down the production and distribution line. For example, Regulation 308 requires the designer to pass certain information on to the manufacturer of the plant.

To illustrate the approach taken by the Victorian Plant Regulations to *controlling* risks, they do not necessarily require an employer to guard dangerous machinery, but rather to control the risks associated with machinery. For example, Regulation 704 provides that:

> (1) An employer must ensure that any risk associated with plant and associated systems of work …
>
> (a) is eliminated; or
>
> (b) if it is not practicable to eliminate the risk, is reduced so far as is practicable.
>
> (2) When an employer is determining measures to control the risk, the employer must not depend solely on the use of administrative controls or personal protective equipment to control the risk unless the employer has established that -
>
> (i) substitution of the plant with plant which has a lower level of risk; or
>
> (ii) the use of engineering controls; or
>
> (iii) isolation of the plant from people are not practicable measures to control risk.

Regulation 705 then outlines the broad principles of machinery guarding that *must* be followed *if* an employer chooses to guard machinery rather than take other control measures. For example, regulation 705(1) provides that:

> If an employer uses guarding as a measure to control risk in relation to plant, the employer must ensure that guarding designed for that purpose will, so far as is practicable, prevent access to the danger point or areas of the plant.

The Victorian Regulations have a focus on design specifics which refer to the special needs of powered plant, adequate guarding, operation controls and emergency devices. This jurisdiction also requires manufacturers, importers and suppliers to liaise with the designer over information supplied, and hazards or risks which may emerge. Apart from Western Australia, the other jurisdictions do not address these requirements in detail.

Under the Commonwealth Regulations (OHS(CE)(NS) Regs (Cwlth) 4.05) designers must: have regard to ergonomic principles; allow maintenance with minimised risk to health and safety; ensure plant and equipment is designed according to all relevant standards; use an appropriate combination of operator protective devices to minimise risk; specify the necessary system of work or operator

competency; and use designs which minimise the build up of unwanted substances or materials. Suppliers are provided with additional requirements (OHS(CE)(NS) Regs (Cwlth) 4.07-08) to: eliminate or minimise risk; and inspect plant between each hire/lease.

The failure to consistently implement the National Standard for Plant is causing confusion and may seriously threaten the effectiveness of the standard (Lynch & Russell 1998). Lynch and Russell address three critical issues:

- *independent verification of plant designs* - Clause 69(2)(b) prohibits the designer and the design verifier of registrable plant from being 'employed or engaged by the same person' unless the designer uses a quality assurance system. Some jurisdictions do not require organisational independence of the design verifier;

- *use of international standards for plant design* – Clause 70(3)(a) requires the design verifier to verify that the design complies with one of eight Australian Standards or another comparable standard deemed acceptable by the authority. Some jurisdictions do not enforce this requirement but rather permit plant to be verified to any technical standard or engineering principle; and

- *inspection of plant by competent persons* – Clause 71(4)(c) requires the applicant for registration of an item of plant to include 'a statement that the plant has been inspected by a competent person and safe to operate'. Some jurisdictions do not require registrable plant to be inspected by a competent person.

Lynch and Russell (1998) recommend that all jurisdictions: agree to the principle of functional independence for design verification; agree to develop a list of comparable international design standards for plant acceptable in all jurisdictions; and agree that the requirement for documented risk assessment will be substituted for inspection by a competent person. All jurisdictions are to implement either requirement.

The question of whether Australian Standards should be incorporated into OHS legislation by reference has been considered recently by the Workplace Relations Ministers' Council and is currently the subject of ongoing consultations between the State and Territory health and safety authorities, relevant Commonwealth agencies and Standards Australia. Resolution of this issue may have significant implications for application of the plant standard in relation to design issues.

The requirement to '*carry out research, testing, & examination to discover, & eliminate or minimise risk during use*' is addressed by most jurisdictions. The Commonwealth Regulations (OHS(CE)(NS) Regs (Cwlth) 4.04) require manufacturers, importers and suppliers to ensure that the following are assessed when carrying out a risk assessment:

- impact of the plant on the work environment in which it is designed to operate;
- range of environmental and operational conditions in which the plant is intended to be manufactured, transported, installed, erected and used; and
- ergonomic needs of persons using plant; need for safe access and egress during use.

In relation to the elimination or control of identified risks and hazards, the Commonwealth Regulations (OHS(CE)(NS) Regs (Cwlth) 4.05) require that a manufacturer must take all reasonably practical steps to ensure that:

- plant is manufactured, inspected and tested having regard to designer's specifications;
- identified design faults are not incorporated into the plant and the designer is consulted for the purpose of rectifying any fault; and
- faults in manufactured plant which may affect the health and safety of employees at work are notified to the person to whom the plant is supplied with advice on steps required to rectify them.

Suppliers are provided with additional requirements (OHS(CE)(NS) Regs (Cwlth) 4.07-08) to undertake regular assessment for the need for further testing for new or increased risks; maintain records of research, testing; and examination.

The Commonwealth (OHS(CE)A (Cwlth) s 22(2) and OHS(CE)(NS) Regs (Cwlth) 4.09-10) and Australian Capital Territory (OHSA (ACT) s 35(3)) legislation also make provisions for the '*erection and installation undertaken according to: approved codes of practice; information supplied by manufacturer/supplier; and where it was reasonable to rely on information provided*'. The Commonwealth Regulations ensure: assessment of any hazard is identified; risk assessment is carried out as necessary; the elimination or control of risk where identified.

The Northern Territory (WHA(OHS) Regs (NT) 87), South Australian (OHSW Regs (SA) 3) and Western Australian (OSH Regs (WA) 4.27 and 4.36) Regulations add the need for: a suitable location; installation and erection by a competent person; the provision of safe access and egress; and for the item to be fixed adequately and tested at startup.

The majority of jurisdictions require obligation bearers to '*make available to the employer adequate information concerning: use; design, construction, & composition; and conditions of use*'. The Commonwealth (OHS(CE)(NS) Regs (Cwlth) 4.06; 4.08; and 4.52) lists the following detailed information to be provided by manufacturers and/or suppliers: system of work for safe use; knowledge, training or skill needed by the person required to test or inspect; relevant emergency

procedures; provision of records kept for the purposes of the Regulation; and registration of plant design.

Western Australia (OSH Regs (WA) 4.30(2); 4.31(2); and 4.32(3)) adds that information provided by the designer, manufacturer and supplier should be in English. South Australia (OHSW Regs (SA) 3.2.12(ii)) requests records of previous ownership from the supplier. As noted above, Victoria (OHS(P) Regs (Vict) 307(3)) requires the designer to revise information supplied if necessary and together with the manufacturer, to keep and maintain recorded technical standards and engineering principles for ten years.

Other provisions include: a stipulation that a duty lies with a third person (supplier) and not a finance provider (Commonwealth OHS(CE)A (Cwlth) s19(2), Australian Capital Territory (OHSA (ACT) s33(2) and New South Wales OHSA (NSW) s18(2)); and a proviso that : '*provisions only apply: in the course of trade, business or other undertakings; and whether or not exclusively for use at work*' (NSW only).

Building & Structures

Work associated with 'buildings and structures' falls within the activities of the building and construction industry. Current legislative approaches to construction work by the Australian jurisdictions vary from being prescriptive to performance-based. Statutes, regulations, codes of practice and other advisory documents relating to construction work have been traditionally categorised into process specific or workplace specific sectors (see NOHSC 1996). The OHS legislative framework for the building and construction industry varies greatly between jurisdictions and draws from a wide range of State and Territory legislation.

The OHS regulatory framework should be distinguished from the regulatory regime governing planning and building control. All buildings must comply with the requirements of the local municipality. Building controls concerned with the building (as opposed to its amenity with its environment) is imposed by statute in the relevant State or Territory, and by the building regulations made under that statute. These are administered by the building inspector/surveyor of the local municipality or shire.

There are two forms of statutory control. First, planning legislation in each State and Territory requires a permit from the responsible local authority before work can commence. This legislation usually imposes standards pertaining to matters such as height, materials and appearance. In addition to these planning provisions, building control standards are set out in building legislation and regulations in each State and Territory.

These provisions adopt the Building Code of Australia 1990 (see below), although there is considerable variation in the content of the regulatory provisions from jurisdiction to jurisdiction. The standards generally impose requirements aimed at ensuring that buildings are safe from failure and fire, present no hazards or discomfort to occupants, neighbours, or the general public. The standards are to be found in the building legislation in the various Australian jurisdictions, and have the force of law.

The building legislation also provides for the administration and enforcement of building standards by local government authorities. Designs for proposed building work must be approved by the local authority before building can commence. Thereafter, the building surveyor or inspector is required to inspect the building work to ensure that it complies with the statutory building standards. At the conclusion of the building work the building surveyor issues a certificate.

In 1994 the Australian Building Codes Board (ACBC) was established by means of an intergovernment agreement between the ministers responsible for building regulation in the Commonwealth, States and Territories. The ACBC is responsible for developing and managing a nationally uniform approach to technical building requirements, currently embodied in the Building Code of Australia, and for ensuring that national standards are performance-based, simpler, more efficient and enable the building industry to adopt new and innovative construction technology and practices. The provisions of the Building Code have no legal status (apart from providing evidence of good practice) until adopted by each jurisdiction. In this sense the provisions of the Building Code of Australia resemble national standards and codes developed by NOHSC.

This brief summary of statutory building controls show that the planning and building control statutes serve to regulate building projects, including ensuring that the building does not pose a risk to the safety or comfort of its occupants, neighbours, or members of the public. The provisions do not impose obligations on designers or builders in relations to the workers (employees or sub-contractors) constructing the building. These statutory provisions are enforced by local authorities. The OHS statutes generally impose duties upon contractors in relation to their employees or sub-contractors engaged in the construction of the building, and members of the public. These statutory OHS obligations are enforced by the OHS inspectorates. With the limited exceptions outlined above, the OHS statutes do not impose duties on designers in relation to the workers engaged in the construction work. OHS legislation in the States and Territories, within the workplace where it addresses buildings and structures, imposes a general duty on obligation bearers to produce buildings and structures which are *safe & without risk to health when properly used*.

Other legislation, which contains provisions relating to these OHS responsibilities, includes the legislation in the States and Territories covering building and construction safety (for example, the

Construction Safety Act 1912 (NSW) and associated Regulations). It should be noted here that this report has only considered in detail the legislation required of the target groups in the principal OHS legislation of the Australian jurisdictions.

There is a need to adequately reflect the shared OHS responsibilities of persons who commission the design of a building or structure, design a building or structure, or who are involved in carrying out the construction work (NOHSC 1996).

The principles of risk management are incorporated in some New South Wales occupational health and safety regulations and industry codes of practice. Regulations based on national uniformity standards and incorporating risk management principles are incorporated into regulations. At present, the New South Wales legislation does not require health and safety plans to be prepared for building projects. The New South Wales WorkCover Authority's Legislative Reform Program is, however, considering new requirements for risk assessment and site safety plans addressing issues such as safe work method statements, a register of hazardous chemicals, and induction training.

The New South Wales government has produced a *Code of Practice for the Construction Industry*, and a *Code of Tendering*. These govern government construction contracts. In addition, the OHS *Guidelines of the Construction Policy Steering Committee* (CPSC) provide a framework for managing occupational health and safety by contractors who wish to do business with the New South Wales government. The government has indicated that it expects that accredited contractors will apply the CPSC Guidelines on all government and non-government projects.

A Year 2000 Best Practice Committee Construction Working Party was established in 1997. It draws together experts in occupational health and safety from the Australian Constructors Association, the Master Builders' Association, a number of major construction companies, the Construction Policy Steering Committee and WorkCover. The Working Party has indicated that the improvement of OHS in the construction industry cannot simply be achieved by a simple set of policy measures, but requires a change to the industry's culture in the way it perceives and manages occupational health and safety. It has identified a number a major strategies for the industry (see the *Year 2000 Best Practice Committee's Construction Working Party Strategy*). These include (see Shaw 1998):

- ensuring that there are clear and appropriate legal responsibilities for all parties in the construction industry. The Working Party has been examining the European Community directive on temporary and mobile construction sites (discussed below); and

- linking OHS more closely to the design of buildings and structures. WorkCover has recognised that designing hazards out of projects is the most effective way of reducing the risk of injury and illness. The faculties of engineering and architecture at Sydney's universities have been

requested to include OHS and 'buildability' considerations in the core curriculum. WorkCover is exploring the possibility of working with the construction industry on a number of projects prior to their commencement with the objective of developing some best practice guidance material on building occupational health and safety into design. It is also exploring this issue with Standards Australia and the Australian Building Codes Board.

The New South Wales Government has also adopted a Memorandum of Understanding (MOU) with the support of major construction contractors and the Construction Industry Trade Unions & Employer Association (1998). The Memorandum fosters a working partnership between the NSW Government, 17 of Australia's largest construction contractors, and the industry's trade unions and employer associations, aimed at implementing strategies to improve the safety performance of the industry. Among the innovative projects which have arisen from the Memorandum is a strategy which addresses OHS at the point of the design of construction work. The strategy, encapsulated in the *Guidelines for Construction and Maintenance Safety in Design for Major Projects*, emphasises that safety is an integral part of design, and not something which is to be 'added-on' (WorkCover NSW 1999: 2). The *Guidelines* add that

"The goal of design is to prevent the hazard from arising so that the risk can be avoided…If the inherent hazard cannot be eliminated but only reduced, then the risk involved needs to be minimised by appropriate risk controls to *As Low As Reasonably Practicable (ALARP).*" (WorkCover NSW 1999:3).

Consolidated regulations in New South Wales are being developed, and will require designers, principal contractors and contractors to prepare detailed health and safety plans before construction work can begin.

In Victoria, there are no longer any regulations relating specifically to the construction industry. Duty holders in the construction industry are subject to the general provisions of the OHSA (Vic.). The possibility of extending the duty to the designers, manufacturers and suppliers of products (including buildings) is currently being considered. The general duty on designers in section 24 of the Act does not extend to the design of buildings. All current regulations (including plant, asbestos and noise), largely implementing national standards emanating from the national uniformity process overseen by NOHSC, set out requirements relating to all workplaces. A number of approved codes of practice, however, relate specifically to the construction industry. Most of these regulations and codes require duty holders to identify hazards, and then to assess and control the risks so identified. They provide guidance as to the types of control mechanisms that might be chosen by the duty holder. Further guidance material is provided through alerts, guidelines and safety bulletins. There is no requirement in Victoria for principal contractors or trade contractors in the construction industry to prepare health

and safety plans for building and construction projects, although in practice inspectors do tend to require such plans.

The Victorian WorkCover Authority emphasises the fact that a suitable design of buildings and structures should incorporate, in addition to structural, the safety of workers, occupants and the public:

(a) during construction/repair/refurbishment;

(b) in service;

(c) during cleaning and maintenance; and

(d) during partial or while demolition if the need arrives. (Comments provided by Bala Rajadurai, Civil Engineer, Victorian WorkCover Authority, 10 September 1999)

In Victoria, the current permit system which constitutes compliance to the Building Code of Australia, ensures structural integrity of the building in service that is newly constructed, refurbished or repaired. The design checks and certification associated with the permit system does not extend to either the structural integrity or the 'buildability' aspect during (a) & (b) as listed above. Neither are the provisions required for clearing/maintenance operations examined prior to construction.

The works associated with (a) & (b) of the above list are usually known as temporary works and are not subject to any permit system and very often does not involve design checks or certification by an independent body. Accordingly, the 'buildability' aspect is not given due consideration and workers, sometimes, are subject to high risks in performing their tasks.

The 'buildability' relates to work procedures that are safe and a building or a structure should be designed giving consideration to safe work procedures.

The Building Act, the Regulations and the Code do not cater or address issues relating to temporary works. The Occupational Health and Safety Plant Regulation does not address construction-related issues either. Currently the Occupational Health and Safety Act is used to address construction safety issues under the general duty of care. This is inadequate and does not address specific issues such as:

- work at heights;
- slips, trips & falls;
- being struck by objects;
- safety in excavation, trenches and tunnels; and
- safety in the use of some equipment not covered by the plant design.

The WHSA (Qld) imposes general duties upon the usual range of duty holders, and includes a general duty upon a principal contractor in the construction industry. The duty on designers does not extend to the design of buildings. WHS Reg (Qld) incorporate the risk assessment requirements of the NOHSC National Standards. The regulations include a requirement that principal contractors and trade

contractors prepare workplace health and safety work plans outlining safe work procedures before construction work can begin. A wide range of advisory standards (called codes of practice in other States) have been developed for the construction industry, and generally require duty holders to engage in risk assessment processes (for greater detail, see Johnstone 1999).

South Australia tends to regulate OHS in the construction industry through the general duties in its principal OHS statute, and through consolidated regulations, incorporating NOHSC National Standards, which apply to all industries, including construction.

The approaches to regulation of the construction industry in the other jurisdictions are not substantially different from those described above.

The Draft National Standard for Construction Work developed by NOHSC in 1997 sought to address construction specific hazards not covered in other declared national standards. However, further work on the draft standard ceased following a decision by Labour Ministers to the effect that NOSHC should no longer be involved in the development of new national OHS standards and codes of practice.

Substances

Once again, the manufacturer and supplier of substances are regulated by general duties in the OHS Statutes (see Table 3 below) and by provisions in the hazardous substances regulations, implementing the National Standard pertaining to Hazardous Substances. These Standards apply to all workplaces and to all persons with a potential for exposure to a hazardous substance.

The majority of jurisdictions make provision for a general duty requiring the manufacture, supply and import of substances to be *safe & without risk to health when properly used.* Victoria (DG(SH) Regs (Vic) Part 4 Div 3) addresses the design of packaging and storage areas through a special provision.

Similarly, most jurisdictions legislate that manufacturers, suppliers, importers should *'carry out research, testing, & examination to discover, & eliminate or minimise risk during use'.*

In the Australian Capital Territory (OHSA (ACT) s 35(1) and (2)) a provision exists that there is '*no requirement to repeat any research where reasonable to rely on results/ information supplied*'.

The most legislated provision in all jurisdictions is that an obligation bearer should '*make available adequate information concerning: use; design, construction, & composition; and conditions of use'*. Commonwealth Regulations have broad coverage on this issue (OHS(CE)(NS) Regs (Cwlth) 6.04; 6.10-11). The Commonwealth Regulations require the obligation bearer to determine: whether a substance is included on the *List of Designated Hazardous Substances*; or *Approved Criteria for*

Classifying Hazardous Substances. Being listed is also a requirement in New South Wales (OHS(HS) Regs (NSW) Cl 7) and Tasmania (WHS Regs (Tas) 69).

The obligation bearer is also required to: keep a determination during the period of manufacture (Commonwealth (OHS(CE)(NS)Regs (Cwlth) 6.04(2)); prepare Material Safety Data Sheets (all jurisdictions); and, if a manufacturer of chemicals, disclosure of the identity of an ingredient if required in an emergency (all jurisdictions).

Suppliers, under Commonwealth Regulations (OHS(CE)(NS)Regs (Cwlth) 6.11), must provide a NICNAS summary report and information concerning the condition of the substance at time of supply.

D = Designer; M = Manufacturer; A = Advertiser; S = Supplier; I = Importer; L = Lessor; E = Erector/Installer.

TABLE 3 (LEGISLATION): THE DUTIES ON PERSONS OUTSIDE THE WORKPLACE TO ENSURE THAT SUBSTANCES ARE SAFE AND WITHOUT RISK TO HEALTH

	CWLTH	ACT	NSW	NT	QLD	SA	TAS	VICT	WA
3(a) Safe & without risk to health when properly used	OHS(CE)A (Cwlth) ss 18(2) and 20	OHSA (ACT) ss 32(2) and 33(1)	OHSA (NSW) s 18(1)	WHA (NT) s 30B)(1) WH (OHS) Regs (NT) 9-11	WHSA (Qld) s 34(1)	OHSWA (SA) s 24(3)		OHSA (Vic) s 24 (3) DG(SH)Regs (Vic)Part 4 Div 1 & 3	OSHA (WA) s 23(3) [NB WA Regs refer only to hazardous substances and not substances]
Obligation Bearers 3 (a)	M S I	M S I	D M S	D M S I	M I	M S I		D M S I	M S I
3(b) Carry out research, testing, & examination to discover, & eliminate or minimise risk during use	OHS(CE)A (Cwlth) s 18(2)	OHSA (ACT) ss 32(2) 33(1) and 35(1)	OHSA (NSW) s 18(1)	WHA (NT) s 30B(1) WH (OHS) Regs (NT) 9-11	WHSA (Qld) s 34(1)	OHSWA (SA) s 24(3)		OHSA (Vic) s 24 (3)	
Obligation Bearers 3 (b)	M S I	M S I		D M S I	M I	M S I		M S I	
3(c) No requirement to repeat any research where reasonable to rely on results/information supplied		*OHSA (ACT)* s 35(1) and (2)							
Obligation Bearers 3 (c)		M S I							
3(d) Make available to employer adequate information concerning: use; design, construction, & composition; and conditions of use	OHS(CE)A (Cwlth) s 18(2) OHS(CE)(NS) Regs(Cwlth)6.04; and 6.10-11	OHSA (ACT) ss 32(2) and 33(1)	OHSA (NSW) s 18(1) OHS(HS) Regs (NSW) Cl 6-8	WHA (NT) ss 30B(1); & (3) WH (OHS) Regs (NT) 67	WHSA (Qld) s 34(2) WHS Reg (Qld) Part 13 s 90-8	OHSWA (SA) s 24(3) OHSW Regs (SA) 4	WHSA (Tas) s 14(2) WHS Regs (Tas) 69-71	OHSA (Vic) s 24(3)	OSHA (WA) s 23(3) OSH Regs (WA) 5.5-6; and 5.8
Obligation Bearers 3 (d)	M S I	M S I	D M S	D M S I	M S I	M S I	M S I	M S I	M S I
3(e) Make available first aid and medical procedures for substance injury	OHS(CE)A (Cwlth) ss18(2) & 19(1)	OHSA (ACT) s 32(2)							
Obligation Bearers 3 (e)	M S I	M I							
3(f) Duty lies with third person (supplier) and not finance provider	OHS(CE)A (Cwlth) s 19(2)	OHSA (ACT) s 33(2)	OHSA (NSW) s 18(2)						
Obligation Bearers 3 (f)	S	S	S						
3(g) Provisions only apply: in the course of trade, business or other undertakings; and whether or not exclusively for use at work			OHSA (NSW) s 18(2)						
Obligation Bearers 3 (g)			D M S						

Queensland (WHS Reg (Qld) s 98), South Australia (OHSW Reg (SA) 4.1.6), Tasmania (WHS Regs (Tas.) 71) and Western Australia (OSHA Regs (WA) 5.6) require that a supplier should ensure that a container of substances should be adequately labelled. New South Wales also requires that the manufacturer, importer or supplier declare whether the substance is a natural or artificial entity. Other obligations include a requirement on manufacturers, suppliers and importers to '*make available first aid and medical procedures for substance injury*' (Commonwealth (OHS(CE)A (Cwlth) s 18(2) and 19(1) and Australian Capital Territory (OHSA (ACT) s 32(2)); and that the '*duty lies with third person (supplier) and not finance provider*' (Commonwealth(OHS(CE)A (Cwlth) s 19(2)), Australian Capital Territory (OHSA (ACT) s 33(2)); and New South Wales (OHSA (NSW) s 18(2)). New South Wales (OHSA (NSW) s 18(2)) also specifies that '*provisions only apply: in the course of trade, business or other undertakings; and whether or not exclusively for use at work*'.

The concepts of 'reasonably practicable' and 'practicable'

The general duty contained in all of the Australian OHS statutes imposes an absolute duty on the employer and obligation bearers, but in all statutes (apart from the WHS (Qld)), this duty is qualified by the expression 'reasonably practicable' or 'practicable' (see Table 4 below). Similarly, in the UK, the duties imposed by the HSW Act and subsidiary legislation imposed thereunder, are limited by the phrase 'so far as is reasonably practicable' (Fink 1997: 4).

A number of factors are taken into account to determine what would be reasonably practicable:

- nature and severity of the hazard;
- knowledge of severity of the hazard;
- knowledge of solutions;
- availability of solutions;
- common standards of practice; and
- cost of solutions.

Case law has held that the overriding question is whether, as a question of fact, it was reasonably practicable to take any precautions other than those that had been taken (Johnstone 1997:204). The test is the objective standard of the reasonable person in the position of the duty holder. The existence of a universal practice is evidence, but not conclusive evidence, that it was not reasonably practicable to use some other and safer method (*Martin v Boulton and Paul (Steel Construction) Ltd* [1982] ICR 366 (QB)).

As Table 4 below indicates, the definition of 'practicable' in the statutes that use that expression is substantially the same as the meaning given to 'reasonably practicable' by the courts. In all of the

Australian jurisdictions, apart from New South Wales and Queensland, the onus of proving practicability is upon the prosecutor.

Section 53 of the OHSA(NSW) sets out a defence of reasonable practicability, and a defence that the commission of the offence was due to factors over which a person had no control. The defendant has to prove the elements of these defences on the balance of probabilities (the civil onus) (*Carrington Slipways Pty Ltd v Callaghan* (1985) 11 IR 467).

In the WHSA(Qld), sections 26 and 37 provide that when there is in force a regulation covering the risk, it must be followed to comply with the general duty. A person must follow relevant advisory standards; or adopt another method that identifies and manages exposure to risk. Where there is no guidance in the regulations or advisory standard, the person must take reasonable precautions and exercise proper diligence to ensure the obligation is discharged. It is a defence for the duty holder to show (on the balance of probabilities) that she or he followed the relevant regulation or advisory standard, or, where there is no regulation or advisory standard about exposure to a risk, that she or he chose any appropriate way and took reasonable precautions and exercised proper diligence to prevent the contravention. Reasonable precautions has, through s 22 of the Act, been defined to mean:

- identify hazards;
- assess risks that may result because of the hazards;
- decide on control measures to prevent or minimize the level of the risks;
- implement the control measures; and
- monitor and review the effectiveness of the control measures.

Proper diligence has been defined to mean:

- that you have in place a system of supervision to ensure that the control measures are being followed.

TABLE 4: THE CONCEPTS OF 'REASONABLY PRACTICABLE' AND 'PRACTICABLE' IN AUSTRALIAN OHS JURISDICTIONS

CWLTH	ACT	NSW	NT	QLD	SA	TAS	VICT	WA
OHS(CE)A (Cwlth) ss 16(1) and 22 Reasonably practicable steps to have been taken where parties followed information supplied with the plant and substances and it was reasonable to rely on that information	OHSA (ACT) s 27(1) Reasonably practicable	OHSA (NSW) s 53 Reasonably practicable	WHA (NT ss 28 and 29(1) So far as is practicable having regard to: its severity; the state of knowledge about the hazard or risk and the ways of mitigating or removing it; and the cost of removing or mitigating it	WHSA (Qld) s 27(1) Reasonable precautions	OHSWA (SA) s 19(1) So far as is reasonably practicable	WHSA (Tas) s 9 Reasonably practicable	OHSA (Vic) ss 4 and 21(1) So far as is practicable having regard to: the severity of the hazard or risk in question; the state of knowledge about the hazard or risk and any ways of removing or mitigating that hazard or risk; the availability and suitability of ways to mitigate or remove that hazard or risk; and the cost of removing or mitigating that hazard or risk	OSHA (WA) ss 3 and 19(1) So far as is practicable and defined as reasonably practicable having regard, where the context permits, to: the severity of any potential injury or harm to health and the degree of risk of it occurring; the state of knowledge about this injury or harm to health, the risk of it occurring and the means of removing or mitigating the risk or mitigating the potential injury or harm to health; and the availability, suitability, and cost of the means of removing or mitigating the risk or mitigating the potential injury or harm to health

‘Designed in’ safety - zero incidents

Although a life cycle approach to identifying obligation bearers suggests that legislation may need to incorporate an expanded number of groups of obligation bearers, an alternative perspective suggests that safety problems should be completely designed out of products at the design phase. Quality management systems encourage a management philosophy that accepts the need for continual improvement in all of these aspects of safe design but, in particular, quality management emphasizes the ideal of zero incidents related to unsafe design. The inference is that all aspects of unsafe design should be eliminated in a systematic, integrated way.

A well-accepted element of best practice OHS management is the use of a hierarchy of control mechanism to mitigate identified risks. There is a commonality of approach of all OHS authorities in this respect. As an example, the Workcover Authority of NSW (1995) outlined their ‘hierarchy of control’ in a six-point approach to implementing OHS systems. Engineers and architects are key parties to the design of plant and equipment and buildings and structures. Heading the Workcover ‘hierarchy of control’ is engineering controls. Discussion of these controls begins with a statement that there should be an attempt to ensure that hazards are ‘designed out’ when new materials, equipment and work systems are being planned for the workplace. The person who designs equipment may not only commit an error in calculations, but be guilty of failing to remove or control a hazard, or of omissions in failing to incorporate desirable features as safeguards to prevent accidents or protect personnel (Hammer 1989: 145). When designers cannot completely eliminate a hazard or the possibility of an accident, they must attempt to minimize the possibility that other personnel will commit errors leading to mishaps. The word ‘error’ in designing includes more than making a mistake in calculation. It also includes any design that is technically practical but is improper, inadequate, or unsuitable for the intended operating conditions. Provision of information about safety issues is a key component in ensuring proper, adequate and suitable design.

Implicit in the Workcover hierarchy of controls is the notion that design defects do make a major contribution to OHS outcomes. However, an integrated control system recognises the interdependency between all aspects of safe design and accepts the importance of a quality, management-based information strategy promoting the benefits of safe design.

The critique of ‘when properly used’

The general duties imposed by the OHS statutes on designers, manufacturers and suppliers etc. outlined above, tend to be qualified by two expressions: that of practicability or reasonable practicability (a defence in NSW and Queensland) and ‘when properly used’. This latter expression severely reduces the scope of the duty owed by the designer, supplier, importer or manufacturer to

design, test, examine, research and provide information to users so that it is safe and without risk to health when properly used.

The expression 'when properly used' addresses a legitimate concern of duty holders. It was probably included to prevent an upstream duty holder from liability for risks to workers arising from the misuse of the plant or substance at the employer's workplace. The upstream duty holder can argue that the plant or substance was safe when it left the duty holder, and only gave rise to risks to workers when in the employer's workplace, when it was used in a manner not intended by the upstream duty holder.

This concern is easily met by the existing requirements of (reasonable) practicability or reasonable precautions and proper diligence, discussed above. It is argued, further, that there are cogent policy reasons for removing the expression 'when properly used' and simply relying on practicability as the qualification for the duty. It is quite foreseeable that plant and substances will not be properly used, and it may be quite feasible for the designer, manufacturer or supplier to take steps in the manufacture or supply of the plant or substances to ensure that the plant or substances are safe and without risks to health even when the plant or substance *is not properly used* (an approach taken in s 19(1)(c)(ii) of the OHS(CE)A (Cwlth)). To take the simplest example, the manufacturer can specify that when operating a machine an employee must not get his/her hands near the trapping space of the machine (that is what is meant by 'proper use'). This suggests that even without a guard, the machine is safe when properly used (see *Herless Pty Ltd v Barnes*, Industrial Relations Commission of Victoria in Court Session, Garlick AP, (unreported), 26 September 1986, discussed in Johnstone 1997:265-266). Yet traditionally the employer (or occupier) has had an absolute duty to guard the machine, and to do everything possible to avoid injury even to a careless employee (see, for example, *Dunlop Rubber Company v Buckley* (1952) 87 CLR 313). It seems strange that such a duty, qualified by reasonable practicability, is not imposed upon designers, manufacturers and suppliers. If the employer or employee had subsequently modified the machine after it was supplied, of course the manufacturer or supplier could argue that at that stage the machine was out of its control, and that all it could (reasonably) practicably do was to design, test and manufacture the machine to be as safe as was reasonably practicable, and to provide information about its proper assembly and use.

This critique is consistent with the 'designed-in safety' argument outlined in the previous pages of this Report. The 'when properly used' qualification removes incentives from designers to design plant or equipment that is as safe as it might possibly be.

This argument is bolstered by the provisions of the various plant and hazardous substances regulations, which, as shown above, require upstream duty holders to conduct risk assessments and to introduce control measures to remedy identified risks. These proactive duties to identify and control risks require upstream duty holders to do all that is practicable to identify and control foreseeable

risks. These duties are undermined by the 'when properly used' qualification in the general duties imposed upon the same duty holders (with the exception of the WA OSH Regulations ss 4.23 and 4.28).

Contractors and sub-contractors and franchisors

Over the past few decades many business organisations have undertaken radical restructuring of their operations (see Quinlan & Mayhew 1998; Quinlan 1998; Burgess & Campbell 1998:9; ACIRRT 1999). One result has been the increased use by business organisations of contractors, and the growth of franchising. Traditional pre-Robens OHS regulation tended to focus on the employer-employee relationship, with the result that workers falling outside the common law definition of 'employee' were not protected by the OHS statutes. The post-Robens Australian OHS statutes have broadened the scope of the employers' (and self-employed persons') general duties to cover 'persons other than employees', thereby providing protection to workers not in conventional employment relations. As explained below, this has significant implications for the regulation of OHS in Australia, as it means that the OHS statutes are flexible enough to cover new and emerging working relationships, some of which involve workers in design, supply and installation activities.

Contractors (individuals or corporations) are increasingly being used by organisations to supply a range of services. In many cases the contractor or sub-contractor will, depending on the nature of the service provided, come within the categories of 'supplier' or 'manufacturer' of plant or substances, or 'designer', 'installer' or 'erector' of plant. For example, a consultant engaged to design a new assembly line will be a designer of plant. A contractor engaged to install a new machine will be an installer of plant. In these instances, not only will the contractor or sub-contractor adopt the role and duty of designer, installer etc. (as outlined above) but will also owe a duty to all persons affected by the contractor's work outlined below.

In some cases a contractor will be supplying or designing services that do not involve plant or substances. For example, the business organisation might engage a consultant to modify a work process to make it more efficient or to perform a different function. In this case the consultant, who will either be an employer in its own right or a self-employed person, will owe the statutory duty of employers or self-employed persons to persons other than employees, even though the work does not involve plant or substances.

Most of the Australian OHS statutes impose a duty of care upon *employers* in relation to persons who are not employees of the employer. Here an 'employer' is a person or an organisation which employs at least one 'employee' (see *Rech v F M Hire Pty Ltd* (1998) 83 IR 293). With the exception of the

OHS(CE)A(Cwlth) and the WHA(NT), a general duty to persons other than employees is also imposed on self-employed persons.

Some of the statutes do not restrict the scope of the employer or self-employed person's duty to any particular non-employees. For example, section 22 of the OHSA(Vic.) provides that:

> every employer and self-employed person shall ensure so far as is practicable that persons (other than the employees of the employer or self-employed persons) are not exposed to risks to their health or safety arising from the conduct of the undertaking of the employer or self-employed person.

Similar provisions are to be found in sub-sections 28(2) and 29 of the WHSA (Qld).

The Commonwealth, New South Wales and Australian Capital Territory provisions adopt a wording that is similar to the Victorian and Queensland provisions, but each imposes an additional geographical limitation on the duty of the employer and self-employed person. Section 16 of OHSA (NSW) specifies that the duty only applies to non-employees ''while they are *at* the employer or self-employed person's place of work.' This duty has a clear geographical limitation, and does not extend beyond the duty holder's workplace. The relevant provisions in the Commonwealth and ACT impose the duty on the employer in relation to persons '*at or near* a workplace under the employer's control' who are not employees or contractors of the employer.

The other Australian OHS statutes do not use the concept of the employer or self-employed person's 'undertaking'. Section 22 of the OHSWA (SA) and section 21 of the OSHA (WA) couch the duty in terms of 'reasonable care', to 'avoid adversely affecting' the health and safety of others 'by an act or omission at work' (OHSWA (SA)) and to 'ensure that the health and safety' of another person is 'not adversely affected wholly or in part as a result of work in which [the employer] or any of his employees is engaged' (OSHA (WA)). The employer's duty to persons other than workers in section 29(1)(b) of the WHA(NT) resembles the wording of the Western Australian provision. A similar provision is to be found in the Tasmanian Act (see ss 9 and 13).

These duties to non-employees are absolute duties, qualified by the concept of (reasonable) practicability. They are non-delegable (*R v British Steel Plc* [1995] 1 WLR 1356; *R v Associated Octel Co Ltd* [1996] 4 All ER 846; and *R v Gateway Foodmarkets Ltd* [1997] 3 All ER 78), and the employer is personally, not vicariously, liable under its duty to employees and non-employees . The self-employed person or the employer cannot simply establish 'a formal or idealised system', sometimes known as a 'paper system'. The employer must ensure that its OHS policies and procedures are fully implemented in relation to persons who are not employees (but see *R v Nelson Group Services Ltd (Maintenance)* [1998] 4 All ER 331 at p 351).

The duties to non-employees are qualified by a nexus with the 'conduct of the undertaking', with work undertaken by the duty holder, and/or with the workplace. The duties do not make any distinctions as to how persons come to be involved in the undertaking or come to be at or near the workplace.

Where the duty is expressed in terms of the 'conduct of the undertaking', this expression has been broadly interpreted by the courts. For example, the conduct of the employer's or self-employed person's undertaking is not limited to the operation of industrial processes, and includes ancillary matters, such as cleaning, repairing and maintaining the plant, obtaining supplies and making deliveries (*R v Associated Octel Co Ltd* [1996] 4 All ER 846 at 851-852; *R v Mara* [1987] 1 WLR 87) as well as trading, and supplying and selling to customers (*Sterling-Winthrop Group Limited v Allen* (1987) SCCR 25). The breadth of the expression was confirmed by Hansen J in *Whittaker v Delmina Pty Ltd.* (Supreme Court of Victoria (Hansen J), [1998] VSC 175, 18 December 1998, unreported, at para 47). Hansen J said that the expression 'conduct of the undertaking':

> is broad in its meaning. In my view, such a broad expression has been used deliberately to ensure that the section is effective to impose the duty it states. It may have been thought that the word 'workplace' had a narrower meaning. … The word ['undertaking'] must take its meaning from the context in which it is used. In my view it means the business or enterprise of the employer … and the word '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. Although such a place may be, and often will be, a workplace as defined [by section 4 of the OHSA(Vic)] it seems to me that the legislature has chosen not to use that word and, rather, to use an expression of breadth and possibly of wider application. I am of the view that this was deliberate and that the word 'undertaking' should not be read as synonymous with 'workplace'. It is neither helpful nor necessary to do so.

In sum, the duty to non-employees will ensure that contractors who are employers, and contractors who are self-employed persons in all jurisdictions except the Commonwealth and the Northern Territory, have a duty to all persons affected by their contract work. The duty is to ensure that the health and safety of these persons is not adversely affected by the work undertaken by the contractor. The duty includes work involving supply, design, manufacture and installation. Such activities need not involve plant or substances. They can involve the supply of management consultancy and similar services.

As well as applying to contractors and others providing services to a workplace, the duty to non-employees also applies, in some states, to the design and supply, through licensing arrangements, of business systems. For example, in the 'business format franchise' the franchisor develops a system of doing business, and permits the franchisee to use that system in the operation of the franchisee's independently-owned business, while requiring the franchisee closely to follow methods developed and specified by the franchisor. Franchise arrangements are primarily governed by contractual

arrangements between franchisor and franchisee, subject to legislation which regulates contracts generally.

In short, the franchisor over time *designs* a business system. Through a licensing arrangement with the franchisee, the franchisor *supplies*, for a fee, that business system (including trade marks and trade names) for the use of the franchisee. The franchisor provides the franchisee with a blueprint for running the business, the initial training in the operations of the franchised business, and ongoing marketing, business and technical assistance during the operation of the franchise. The franchisee is obliged closely to follow the business system. Franchise agreements tend to provide for the termination of the franchising agreement if it is not closely followed by the franchisee. Franchise agreements often constrain the franchisee's choice of suppliers, requiring the franchisee to purchase supplies from a list of suppliers approved by the franchisor.

It is possible that some franchisees might be categorised as 'employees', but in the usual case franchisees will probably be non-employees. The *franchisee* would owe its employees the duty to employees, and its contractors and customers the duty to non-employees. It is arguable that at least in Victoria and Queensland the *franchisor* owes a duty to non-employees to franchisees and the franchisee's employees, contractors and clients (NOHSC 1999:ch 2).

The principal basis for this argument is that the courts have made it clear that an employer cannot manipulate its contractual arrangements with its labour force to modify or side-step its OHS obligations. For example, the House of Lords in *R v Associated Octel Co Ltd* held that if work conducted by a contractor falls within the conduct of an employer or self-employed person's undertaking, the employer or self-employed person is under a duty to exercise control over the activity, and to ensure that it is done without exposing non-employees to risk (see also *WorkCover Authority of New South Wales (Inspector Hughes) v Boral Montoro Pty Ltd* (unreported, NSW Industrial Commission, Peterson J, 19 December 1997). Lord Hoffman held that:

> the provision is not concerned with vicarious liability. It imposes a duty upon the employer himself. That duty is defined by reference to a certain kind of activity, namely, the conduct by the employer [or self-employed person] of his undertaking. It is indifferent to the nature of the contractual relationships by which the employer chooses to conduct it. … [A] person conducting his own undertaking is free to decide how he will do so. Section 3 [of the British Act] requires the employer to [conduct his undertaking] in a way which, subject to all reasonable practicability, does not create risks to people's health and safety. If, therefore, the employer engages an independent contractor to do work which forms part of the employer's undertaking, he must stipulate for whatever conditions are needed to avoid those risks and are reasonably practicable. He cannot, having omitted to do so, say that he was not in a position to exercise any control. … The employer must take reasonably practical steps to avoid risks to the contractor's servants which arise, not merely from the physical state of the premises … but also from the inadequacy of the arrangements which the employer makes with the contractors for how they will do the work (*Associated Octel*, at pp 850-851).

This reasoning applies to a franchise arrangement. The threshold issue is whether the activities of the franchisee form part of the 'conduct of the undertaking'. Earlier in this section we adverted to the breadth of the definition of 'conduct of the undertaking', which would appear to cover the licensing arrangements used in the business format franchise. Usually franchisees are established to implement the franchisor's business system, often on premises leased from the franchisor, and laid out following the franchisor's specifications. A common characteristic of franchising agreements is that the franchisor has tight control over the way in which the franchisee's enterprise is managed and operated. In NSW the geographical limitation in section 16 would probably preclude the application of that section to the franchisor in relation to the franchisee's employees etc. The wording in the South Australian and Western Australian OHS statutes might also prevent the extension of the duty to franchisors in relation to franchisees and their employees, contractors and customers. In Victoria and Queensland, however, it would appear that the duties in section 22 of the OHSA(Vic) and sections 28(2) and 29 of the WHSA(Qld) would impose duties upon franchisors in relation to franchisees, customers, and all employees and contractors engaged by the franchisee.

Problems with current requirements for plant and substances

The present requirements, like their UK equivalents, fail to provide an adequate level of protection in a number of important respects. In 1984, the UK Heath and Safety Executive, responding to union and worker concern, published a series of proposals intended to remedy some of the most serious of the limitations of the UK provisions. Since Australian and UK provisions are very similar, these proposals (as summarised by Creighton & Rozen 1997: 82) are equally pertinent to most of the Australian requirements:

- the interpretations of 'when properly used' excludes situations where even quite foreseeable operator error had contributed in some measure to the creation of unsafe conditions (see further the analysis above);

- the fact that suppliers and other obligation bearers can make available instructions and other information as to 'proper use' with which it is almost impossible to comply, and thereby avoid the effect of the provisions;

- the term 'for use at work' has been used to exclude the storage, carriage and even processing of substances;

- doubt as to whether the legislation extends to hazards associated with the cleaning and maintenance of articles (plant), as opposed to their use to produce goods and services;

- the information requirements appear to be too narrow, for example because they do not extend to the supply of additional information as it becomes available, or as to proper means of storage or disposal; and

- the fact that prohibition notices can be issued only in the face of imminent risk, whereas often the most effective point at which to eliminate risk associated with unsafe articles (plant) and substances is at the point of manufacture, import, supply etc. and before there is any imminent risk.

Problems with current requirements for buildings and structures

As indicated above, the Australian OHS statutes, and the building control provisions, fail to make adequate provision for the safe design of buildings from the perspective of the worker involved in the construction process. In sum:

- The planning and building control statutes and regulations do not impose obligations on designers of buildings to ensure the health and safety of those who construct the buildings.

- With a few exceptions, the OHS statutes do not impose obligations on designers to design building work so that it is safe and without risks to the health of those who construct, maintain or demolish the buildings.

Civil liability

Workers injured by plant, equipment or substances at a workplace may be able to sue the designer, manufacturer or supplier. Two possible courses of action might be available: a common law negligence action, or a strict liability statutory claim.

Common law liability

In 1932 a majority of judges in the House of Lords in *Donoghue v Stevenson* (1932 AC 562) reasoned inductively from the particular instances of negligence which already existed (including the employer's liability) to establish a general principle of liability for negligent conduct. The case was a ‘product liability’ case which opened the way for workers to sue manufacturers for negligently caused defects in plant, equipment and substances supplied to the workplace which cause injury (or disease) to the worker. The duty in *Donoghue v Stevenson* has been extended to persons who use or share the use of a

product, even on a purely temporal basis, and at someone else's instigation or for someone else's benefit (Brooks 1993:219).

Historically, employees suffering a work-related injury or disease have tended to sue employers in negligence, in combination with claims for workers' compensation (Johnstone 1999: 534). Where the injury or disease was to some extent caused by the negligence of the manufacturer, designer, or supplier of plant or equipment, or the manufacturer or supplier of a substance, the employer could seek to join the supplier or manufacturer as a co-defendant, or seek contribution from that party (see Luntz & Hambly 1995:Ch 18). With the restriction or abolition of common law actions for work-related illness or injury in some Australian jurisdictions in recent years, it is increasingly likely that employees will turn their attention to suing parties other than employers for negligence in design, manufacturer, supply, importing or installation of plant or equipment, in the development (by, for example, a consultant) of a system of work, in the manufacture, supply or importing of substances (see Brooks 1993:218-221), or in the inspection of plant, equipment or substances.

There is little doubt that a worker suffering a work-related illness or injury as a result of the negligence of a manufacturer (see, for example, *Howard v Furness Houlder Ltd* [1936] 2 All ER 781; *Taylor v Rover Co Ltd* [1966] 2 All ER 18), or supplier (*Griffiths v Arch Engineering Co Ltd* [1968] 3 All ER 217) of plant, equipment or substances (see also *Fisher v Harrods Ltd* [1966] 1 Lloyd's Reports 500; *Taylor v Rover Co Ltd* [1966] 2 All ER 181), can sue for damages. This product might be purchased, hired or otherwise obtained by an employer in the course of employment.

To be able to sue in negligence, the employee need not be using the plant, equipment or substance – it is enough, for example, that the use of a dangerous substance by a fellow employee exposes the employee to disease (*Wright v Dunlop Rubber Co Ltd* [1972] 13 KIR 255; and see Brooks 1993:219-221). The action can lie against designers and architects, or the manufacturers of component parts, as well as to the manufacturers of the finished product, to retailers or distributors, to hirers, and even to repairers and second-hand goods dealers (for case law see Brooks 1993:221). What the duty consists of in these various situations depends on the defendant's place in the chain of supply, on the opportunities for independent examination and testing, and other particular circumstances of the case.

A liability can arise from a danger or defect which results from the careless design, production, supply or installation of a product or component part, inadequate labelling or instructions (see Brooks 1993:221-223). The duty holder is required to take whatever reasonable and practicable precautions are necessary to avoid exposing the employees or their customers or clients to a foreseeable risk of injury. Precautions might include (Brooks 1993:221-222):

- the inclusion of safety features in the plant, equipment or substance, the redesign of the product to remove unsafe aspects, or the substitution of safe for dangerous parts;

- where dangerous aspects of the product cannot be removed, the inclusion of sufficient warning aspects of the product and information as to how the product can be safely used; and

- where neither of these precautions are possible, the withdrawal of the product.

In certain circumstances an employee suffering a work-related illness or injury may also be able to sue a consultant who has given negligent advice to the employer on the design or implementation of a system of work (Johnstone 1997:534). The consultant has the duty to take reasonable care to ensure that the advice 'is appropriate, and will not, if followed, endanger the health and safety of employees' (Brooks 1993:244).

In suing for damages for an injury sustained through the negligence of another, the essential first step is that the injury (or occupational disease) did result from a danger or defect of some type of plant or equipment, building or structure, or substance (Brooks 1993:222). This may have resulted from the design, careless production, or danger or defect in one of the component parts of the product, or careless installation of the product. Similarly it may be a danger resulting from inadequate labelling or instructions as to the dangerous properties of a product and the correct and safe method of use. It is not necessary that the danger or the defect in the product be the sole cause of the injury or disease – it is only necessary, to establish a 'chain of causation', that, but for the danger or defect, the injury would not have occurred or the disease would not have been contracted.

There is no liability unless the danger or defect and the injury or disease it produces are foreseeable, in the sense that a reasonable and prudent obligation bearer would have foreseen them as genuine, even if slight possibilities (Brooks 1993:222). This risk of injury must not be 'far-fetched or fanciful'.

There is no failure to take reasonable care if the designer, manufacturer etc. could not reasonably have done anything which would probably have prevented the foreseeable injury. Relevant precautions include: inclusion of safety features; redesign to omit dangerous aspects; the accompaniment of adequate warnings of any danger and the safest method of use; or withdrawal of the product from the market. There is, however, no liability if the precautions are not reasonably practicable. Reasonable practicability is tested by looking at cost, interference with the function of the product and work process in which it is to be used, and the existence of separate risks. There is also a weighing of three factors with regard to the designer, manufacturer's etc. decision to take the suggested precaution: the degree of probability of the risk; the seriousness of the injury or disease which might foreseeably occur, and the cost and inconvenience of the available precautions (see also the discussion of reasonable practicability above). The issue of foreseeability is considered next.

Foreseeability

Following Brooks (1993: 407-410), foreseeability has three particular features that are of importance in establishing liability for negligent manufacture, supply, etc. of products. These are: unsafe design; careless production and intermediate examination.

Unsafe design can arise in two ways: it may be a defect as a result of carelessness in the design process (*Wright v Dunlop Rubber Co Ltd [*1972] 13 KIR 255). In this instance the degree of manufacturer's liability for any defects depends on the amount of rechecking and retesting it is reasonable to expect the manufacturer to do after receiving the design (*Vacwell Engineering Co Ltd v B.D.H. Chemicals Ltd* [1971] 1 (QB) 88). However, if it is reasonable to rely on the design as submitted as having been adequately checked and tested the manufacturer will be free of liability. If not, both designer and manufacturer will be liable independently.

Careless production. Danger or defect in a product may also result from negligence in the production process. The manufacturer has an obligation to take practicable precautions to avoid foreseeable defective production (Brooks 1993:224). Defects through carelessness in manufacture are clearly foreseeable, unless the manufacturer has instituted a vigorous system of supervision and quality control. Manufacturers will also be liable vicariously for the negligence of their employees.

There is also negligent manufacture where the product, although not in itself defective, is insufficiently, inadequately, incorrectly labelled (see Brooks 1993:225). Similarly a risk can be caused not only by the contents but by the packaging if containers are faulty or inappropriate (*Adelaide Chemical and Fertilizer Co. Ltd. v Carlyle* [1940] 64 CLR 514; *O'Dwyer v Leo Buring Pty Ltd* [1966] WAR 67; and *Aswan Engineering Establishment Co v Lupdine Ltd* [1987] 1 All ER 135).

Intermediate examination. Liability of others, such as distributors, retailers etc. will depend on the opportunities for intermediate examination and testing, and the degree to which those intermediaries were entitled reasonably to rely on the reputation of the manufacturer and a guarantee of the fitness of the product they are distributing or retailing (Brooks 1993:230). Where examination is possible, a number of factors will be relevant: the reputation of the manufacturer, the nature of the product and the facilities of the intermediary. These interact, so that each case must be decided on its own merits (*Taylor v Rover Co Ltd* [1966] 2 All ER 181; and *Davie v New Merton Board Mills Ltd* [1959] AC 604). If the manufacturer is unknown by the intermediary or has no substantial reputation, it is quite likely that the intermediary will be required to test the product, especially if the intermediary is a large-scale supplier of goods with accordingly large facilities (*Fisher v Harrods Ltd).*

It should be noted that intermediate examination does not eliminate the manufacturer's duty of care to the user, but that it may create an additional but independent liability (Brooks 1993:232).

Strict liability

Recently, a number of countries, including Australia, have moved towards the introduction of strict liability for defective products (Brooks 1993:411). Statutory provisions for injuries sustained from defective products, which might include plant, equipment and substance at work, generally do not require the plaintiff to show that the defendant was negligent.

The *Trade Practices Act 1974* (Cwlth) (Part V Division 2A and Part VA), and States sale of goods legislation, include provisions imposing strict liability on manufacturers and suppliers of defective goods (Johnstone 1997:267). This legislation appears to have an extremely limited, if any, application to workers (Brooks 1993:241-243)). Part V, Division 2A provides 'consumers' of products with rights of action, but defines a 'consumer' as a person who 'acquires' goods other than for purposes such as resupply or transformation in trade or commerce. Section 74A(2)(a) defines 'goods' as goods 'of a kind ordinarily acquired for personal, domestic, or household use or consumption'. These two definitions mean that part V. Div 2A has very little application to workers suffering injury, although, as Brooks (1993:242) notes: 'Division 2A actions *might* be available to employee outworkers in relation to the acquisition of defective products such as sewing machines'. The additional provisions introduced in 1992 in Part VA do not have the same limitations as Part V Div 2 has, but s 75AI states that the key provisions in Part VA do not apply to a loss in respect of which workers' compensation can be recovered.

Overview of legislation and regulation obligations in comparable overseas jurisdictions

There is much to be learnt from the experience of other countries, but those whose legal systems approximate to our own have by far the most to tell us. Provisions in jurisdictions with radically different legal systems (e.g. civil law) and approaches do not lend themselves to translation into the common law jurisdictions. Mindful of this, research on the international dimension for this Report has been targeted and focused on the UK provisions (which resonate closely with those in Australia and reflect recent directives in the European Union), the European Union Directives because these represent crucial and up to date thinking within the European Community as a whole, and to a much lesser extent, selected North American provisions. The latter are not particularly illuminating, given that very little attention has been given to design considerations, a matter explicable in large part by the focus on product liability (rather than OHS) as the principal vehicle for addressing this issue.

United Kingdom

In the UK, prior to the HSWA (UK), protective legislation, with certain exceptions, tended to concentrate on the person in charge of the enterprise, who more usually than not would be the employer (Wright 1997:88). On the civil side the UK imported the US 'product liability' concept, now reinforced by the EC Directive on that subject, with parallel statutes having preventive objectives and backed up by criminal sanctions, such as the *Consumer Safety Act 1978 (*Wright 1997:89). Until the HSW Act there were only isolated provisions addressing the manufacturer or supplier, such as s 17 of the *Factories Act 1961*, which imposed limited duties with regard to construction, sale or letting on hire of machines in factories intended to be driven by mechanical power.

All this changed in 1974. Section 6 of the HSWA (UK), as amended by the *Consumer Protection Act 1987*, now governs products for use at work, and aims to ensure that acceptable levels of health and safety are incorporated at the design and manufacturing stage (Abbott & Tyler 1997:130-1). Section 6 provides that it is the duty of any person who designs, manufactures, imports or supplies any article or substance for use at work to ensure, so far as is reasonably practicable, that it is so designed and produced that it will be safe and without risks to health at all times when it is used by people at work. The responsible person has to arrange for the necessary testing and examination to be carried out to ensure that the duty is met. There is also a specific duty to take the necessary steps to ensure that adequate information is supplied with the article so that it will be safe and without risk to health when used and disposed of. The person is also required to provide revisions of information, if that becomes necessary, because a serious risk to health or safety is discovered after the products are supplied. The overall purpose of section 6 is to set out an extended 'chain of responsibility' involving, not only the employer, but manufacturers, suppliers, erectors and installers. These duties extend only to things done in the course of trade , business or other undertaking carried on by a person (whether for profit or not) and to matters within that person's control (Wright 1997: 90). The very considerable similarities with the relevant Australian provisions, described above, will be apparent.

In conjunction with section 6, the Regulations implementing European Directives – for example, the *Supply of Machinery (Safety) Regulations 1992* and the *Personal Protective Equipment (EC Directive) Regulations 1992* – contain provisions relating specifically to product risks in the workplace (Abbott & Tyler 1997:131). Whilst these regulations are specifically designed to ensure the safe manufacture, supply and sale of machinery, certain features also have a direct bearing on safety in use (Bateman et al 1996:369). Designers and manufacturers must undertake a risk assessment of moving parts so that they are built, supplied to end users, and installed in such a way as to avoid hazards. For example, the *Supply of Machinery (Safety) Regulations* specify that manufacturers should: identify the health and safety hazards (trapping, crushing etc.) that are likely to be present when the machinery is used; assess the likely risks; and eliminate the risks, or if that is not possible, provide safeguards, or if that is not

possible, provide information about any residual risks and place signs on the machinery to warn of risks that cannot be reduced in other ways.

Under the *Control of Industrial Major Accident Hazards Regulations 1984* manufacturers in control of industrial activities that have the potential to cause major accidents must: identify major accident hazards and take steps to prevent major hazards and provide those working on site with information, training and equipment.

Designers of buildings

As noted earlier in this Report, the general duties imposed by Australian OHS legislation on designers extend only to designers of plant, and not to designers of buildings and other types of construction work, although there are provisions for construction which relate to specific processes or workplace sectors. (An exception is s 23(3a) of the WA OSH Act which imposes duties on designers of buildings and structures and the Victorian WorkCover Policy Group is currently examining the Victorian OHS Act to ensure construction issues, including provisions for designers of buildings and structures, are also addressed.) Yet the way in which a building is designed may give rise to significant OHS risks to those who have to construct the building, and who maintain and clean it after construction. It is important, therefore, that the OHS statutes require designers of building and construction projects to take into account OHS concerns.

A possible model for such a duty is to be found in the European Community 1992 *Directive To Implement Minimum Health and Safety Requirements at Temporary or Mobile Construction Sites* (the Construction Sites Directive). In 1994 the British government implemented this directive in the form of the *Construction (Design and Management) Regulations 1994 (*CDMR), which was supplemented by an Approved Code of Practice for the CDMR. This section briefly analyses the CDMR.

Apart from work for a domestic client and other small-scale projects, the CDMR impose duties on a wide range of parties, including designers. The duties on designers must be seen within the context of the duties imposed upon other parties involved in the construction process, beginning with the client.

The *client* (or the *developer* of domestic premises) is required to appoint a *planning supervisor* and a *principal contractor*, and must ensure that all parties involved in the project are competent and adequately resourced to carry out OHS responsibilities. The client or developer must also ensure that a *health and safety plan* is developed by the principal contractor before work begins, and must ensure that a *health and safety file* is kept available for inspection (See CDMR, especially regulations 4 and 5. A fuller treatment of the client's duties can be found in Johnstone 1999:136-137).

Most importantly for this project, duties are imposed upon *designers of buildings* **(**Johnstone 1999:136-137). Regulation 2 of the CDMR define **'**designers' to include everyone preparing drawings,

design details, specifications and bill of quantities for the project, and include architects, structural engineers and surveyors. This definition of designer is wider than the definition in section 6 of the HSAWA. Regulation 13 of the CDMR imposes a range of duties on designers**.** Designers are also subject to the duties in s 6 of the HSAWA (see also the Approved Code of Practice for the CDMR, ss 55-66). These designer duties stand alone, and do not depend on the existence of the client or appointments made by the client. Before preparing a design, designers, including contractors who carry out design work, must ensure that the client has been made aware of the client's duties under the CDMR (see above).

Construction is another area of OHS legislation that has received considerable attention in the UK. When designing for construction work, designers must consider, together with other design factors, foreseeable health and safety risks to all people affected by the construction work during construction and in the subsequent maintenance and cleaning of the structure. In short, the CDMR require designers to apply a risk assessment and control process to the construction work.

At the time the design is prepared, designers must, as far as is reasonably practicable (see Approved Code of Practice ss 56-63), identify the hazards inherent in carrying out construction work, and, where possible, alter the design to avoid the hazards. Where the hazards cannot be removed by design changes, the designer should minimize the risks and provide information about the remaining risks (see Approved Code of Practice ss 57, and 59-62). The designer should describe any matters that require particular attention by a contractor when devising a detailed method of construction. The CDMR assume that contractors will be familiar with many common hazards in the construction industry, and only require enough information to be provided to alert contractors and others to matters which they could not reasonably be expected to know about (see Approved Code of Practice s 63). The information should include the principles of design relevant to the health and safety of those working on the project, descriptions of special requirements for working safely, and any special assumptions that the designer has made about working practices. Where the CDMR apply generally to the project information can be passed to the planning supervisor and on to contractors as part of the health and safety plan or file. Where the CDMR do not apply generally, information should be supplied as part of the design information given to contractors.

The designer must co-operate with the planning supervisor and any other designers involved in the project as far as is necessary to comply with OHS regulatory requirements, and should supply relevant information. The designer should discuss OHS aspects of the design with the planning supervisor, and should consider incorporating the supervisor's suggestions.

These CDMR duties imposed new requirements on designers. Initially, some professions, such as quantity surveyors, were slow to see that the duties imposed on designers applied to them (Hemsley

1995:39). Early reports of the implementation of the CDMR suggested that designers were slow to implement the OHS risk assessment requirements. Two years after the CDMR came into operation, an inspector involved in a project implementing the regulations commented that designers had frequently failed to conduct adequate risk assessment processes (Oliphant 1996:28). The HSE itself has queried whether academic institutions are doing enough to educate students in the OHS aspects of construction design (HSE 1998).

The CDMR also impose duties upon the *planning supervisor* to notify the Health and Safety Executive (HSE) of the project; to take reasonable steps to ensure the co-ordination and flow of information between the *designers*; to ensure designers comply with their duties; to ensure a pre-tender *health and safety plan* (describing the project and its time lines, outlining significant risks and other OHS information relevant to contractors) is prepared before contractors are engaged; to advise the *client* (and contractors) on the competence of prospective designers, contractors and suitability of health and safety plan prepared by principal contractor for the construction phase; to ensure a *health and safety file* (record of OHS information for the end user) is prepared, contributed to by all other parties, kept available for inspection on site, and handed over to client at the end of the project.

The *principal contractor* also is subject to a range of duties, which include ensuring compliance with OHS legal obligations, developing and updating the health and safety plan; ensuring that risks are identified and assessed; ensuring co-operation between all contractors so that all OHS obligations are met; ensuring that all contractors and employees comply with rules set out in the plan; supplying the planning supervisor with all relevant information for the health and safety file; and ensuring that employees and self-employed persons discuss and advise each other on OHS matters.

Finally, *contractors* must co-operate with the principal contractor and comply with the contractor's directions and site rules, and must provide the principal contractor with necessary OHS information.

An evaluation of the Construction (Design and Management) Regulations for the Health and Safety Executive (Evaluation of the Construction (Design and Management) Regulations (CDM) 1994, Health and Safety Executive, Contract Research Report, 158, 1997) concluded that, although it is too early to know the full impact of the regulations, in broad terms, perceptions are that: (i) there are health and safety benefits relating to increased awareness, having the health and safety plan on site, better planning and coordination, behavioural changes on site, less risk to manage on site, and less incidents; (ii) there is little benefit to date by way of reduced expenditure ensuing from any health and safety benefits; (iii) the requirement on clients to make all safety related information available, is having a major impact on site health and safety; and (iv) better and clearer risk and hazard identification is having an impact on health and safety.

European Union

The European Union has very advanced OHS standards and exercises a major influence on worldwide health and safety law and policy today (Wright 1997: 27). Through its Advisory Committee on Safety, Hygiene and Health Protection at Work, the Commission, amongst other things, is concerned with the development of a common approach to problems existing in the fields of safety, hygiene and health protection at work; and submitting opinions on proposals for directives and on measures proposed by the Commission which are of relevance to health and safety at work.

One of the fundamental social rights of workers in the European Union, as covered in the 1989 Community Social Charter, is 'health protection and safety at the workplace' (Category ix). This is in accord with the International Labour Organisation's Occupational Safety and Health Convention, 1981, which, at Article 12, states the following:

> Measures shall be taken, in accordance with national law and practice, with a view to ensuring that those who design, manufacture, import, provide or transfer machinery, equipment or substances for occupational use –
>
> (a) satisfy themselves that, so far as is reasonably practicable, the machinery equipment or substance does not entail dangers for the safety and health of those using it correctly;
>
> (b) make available information concerning the correct installation and use of machinery and equipment and the correct use of substances, and information on hazards of machinery and equipment and dangerous properties of chemical substances and physical and biological agents or products, as well as instructions on how hazards are to be avoided;
>
> (c) undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with subparagraphs (a) and (b) of this article.

The trend of European Community legislation in recent years has been towards safer design and manufacture of products for industrial and domestic use. The 'Six Pack' Health and Safety Directives of 1992, the primary European health and safety legislation, were set out to encourage member countries to improve the health and safety of workers in the European Union (Lack 1996: 598). These Directives include the Framework Directive (89/391/EEC), which sets out general principles and duties for employers, and another five 'daughter' directives dealing with specific areas of health and safety: Workplace (89/654/EEC), Work Equipment (89/655/EEC), Personal Protective Equipment (89/656/EEC), Manual Handling of Loads (90/269/EEC), and Use of Display Screen Equipment (90/270/EEC). These Directives tend to place duties upon employers, and do not make provision for duties on manufacturers, designers or suppliers. For example, the Manual Handling Directive imposes duties on employers, but not on persons supplying plant, equipment or material to the employer's

workplace to ensure that workers are not exposed to manual handling risks. Likewise, the original Protective Personal Equipment Directive (89/656/EEC) imposes obligations on employers in relation to personal protective equipment, although it should be noted that article 1 requires personal protective equipment to 'comply with the relevant Community provisions on design and manufacture with respect to safety and health.' Subsequent directives amending the Personal Protective Equipment required persons placing such equipment on the market to comply with EC standards, and must bear the CE marking (see below), and information as to when the marking was affixed. The Work Equipment Directive applies to all work equipment such as machines, tools, apparatus, and installations used in the workplace. The Work Equipment Directive includes a requirement that the work equipment must be suitable for work without risk to employee health and safety, and places duties upon installers of work equipment.

While most of the other European Community Directives pertaining to health and safety at work tend to focus on employer's duties, some have an impact upon designers, manufacturers, and/or suppliers. For example, Directive 93/103/EC lays down requirements for new fishing boats. Directive 98/24/EC *On the Protection of the Health and Safety of Workers from the Risks Related to Chemical Agents at Work* requires the European Commission to propose, and over time to revise, objectives in the form of indicative occupational exposure limit values for the protection of workers from chemical risks. Member states are then to establish corresponding binding national exposure limit values. The Directive also prohibits the production, manufacture or use at work of chemical agents or activities set out in Annex III of the Directive. Other Directives ban specific agents, and as such impose at least indirect restrictions on the supply of substances to the workplace (see, for example, Directive 88/364/EEC, *On the Protection of Workers by the Banning of Certain Specified Agents and/or Certain Work Activities*, and Directive 91/659/EEC on the marketing and use of asbestos).

More important for this project, a series of Directives place direct and significant obligations upon designers, suppliers and suppliers. While it is not possible within the scope of this project to provide a detailed analysis of these provisions, the most important provisions are briefly summarised in the following paragraphs.

Council Directive 86/188/EEC *On the Protection of Workers from the Risks Related to the Exposure to Noise at Work*, after imposing significant obligations upon employers, requires Member States to take appropriate measures to ensure that the design, building and/or construction of new plant) comply with the Directive's requirements to reduce, at source, noise to the lowest level practicable. Earlier Directives had set down requirements for noise reduction in relation to a wide variety of plant and equipment (see, for example, Directive 81/1051/EEC, as amended, in relation to construction plant and equipment, 86/662/EEC concerning noise emitted by excavators, dozers and loaders, and others).

Some, older, directives regulate the placing on the market of certain types of equipment (see, for example, Directive 73/361/EEC concerning the certification and marking of lifting equipment such as wire-ropes, chains and hooks). Directives 84/528/EEC and 84/529/EEC provided for harmonised laws relating to lifting and mechanical handling appliances, and electronically operated lifts. They also provided for EEC procedures for the inspection of such equipment to ensure that it complied with EEC requirements. Directive 93/59/EEC harmonizes safety requirements for machinery manufactures for use in the European Union.

A range of Directives have specified that products (including lifting equipment) had to be stamped with a CE marking to indicate that they had conformed with European Community requirements. In 1989 the European Commission proposed that common rules be drawn up to provide for a CE conformity marking with a uniform design, and for uniform procedures in the use of the marking. This was achieved in Directive 93/68/EEC.

Directive 76/117/EEC and Directive 82/130/EEC, both of which have been frequently amended, amongst other things impose obligations upon manufacturers and sellers of electrical equipment for use in potentially explosive atmospheres in mines susceptible to firedamp. Directive 94/9/EC repealed these directives, and replaced them with general provisions covering equipment and protective systems intended for use in potentially explosive atmospheres. The Directive imposes requirements on designers, manufacturers and suppliers of such equipment.

As noted above in the discussion of the British *Construction (Design and Management) Regulations*, the 1992 *Directive To Implement Minimum Health and Safety Requirements at Temporary or Mobile Construction Sites* (92/57/EEC) (the Construction Sites Directive), imposes far reaching duties on designers of construction projects.

A number of Directives have been introduced to cover dangerous substances and preparations. A key Directive has been Directive 67/548/EEC, pertaining to the classification, packaging and labelling of dangerous substances placed on the market in the Member States of the Community. The Directive requires member States to take all necessary steps to ensure that dangerous substances cannot be placed on the market unless the strength and impermeability of their packaging, their labelling, and accompanying safety instructions, satisfy the requirements of the Directive, as amended. The directive works in tandem with Directive 88/379/EEC, on the classification, packaging and labelling of dangerous preparations (that is, a mixture or solution composed of two or more substances), which provided for the setting up of an information system in the form of safety data sheets for dangerous preparations. Both of these Directives have been regularly updated and amended.

In Directive 90/492/EEC the Commission defined and laid down a system of specific information on dangerous substances and preparations, in the form of safety data sheets principally intended for

industrial users to enable them to take the measures necessary to ensure the protection of the health and safety of workers. Directive 91/155/EEC required any manufacturer, importer or distributor responsible for placing a dangerous substance or preparation on the market to supply a recipient who is an industrial user with a safety data sheet. The Directive provides for consistent information and format. Directives 93/21/EEC and 93/18/EEC outline the criteria for classifying, packaging, and labelling. Directive 93/72/EEC required new substances placed on the market to be notified to the competent authorities of member states by means of a technical dossier. Directive 93/793/EEC imposed new obligations on manufacturers and importers of existing substances on the EIECS (European Inventory of Existing Commercial Substances). Manufacturers and importers of certain substances are required to submit, and regularly update, specified information about the substance (name, Einics number, quantity produced or imported, and further specified safety information). Member States may require similar data to be submitted to them. On the basis of data submitted to it, and on the basis of national lists of priority substances, the Commission must regularly draw up lists of priority substances requiring attention because of their potential OHS and environmental effects. Importers and manufacturers are required to conduct risk assessments of priority substances, and report the results to designated Member States. Member States must evaluate the information, and submit an assessment of the risks to the Commission. The Commission may then propose further measures under Directive 76/769/EEC. Directive 93/67/EEC lays down the principles for assessment of risks to persons and the environment of substances notified in accordance with Directive 67/548/EEC.

In sum, the European Community has been very active in developing and updating measures requiring the safe design, manufacture, supply and importing of plant, equipment, and substances, and the design and construction of buildings.

North America

As indicated above, design considerations have not been a significant focus of OHS attention in either Canada or the United States of America. Product liability laws, the main instrument used in those jurisdictions for addressing design issues, has barely touched the OHS field, in part because the exclusive remedy provisions of the relevant workers compensation legislation generally bar claims against suppliers within the jurisdiction in which the worker is injured.

Nor do the current common law liability rules provide a useful model from which Australia might borrow. On the contrary, those rules act to penalise rather than promote, safety testing for latent harms. The common law requires victims to produce scientific research that demonstrates a cause-and-effect relationship between the manufacturer's product and the plaintiff's injuries: 'Unfortunately, it is the manufacturers that are better able, but disinclined, to produce this research due to pervasive failure in

both the market and government regulatory programs. A manufacturer that conducts research can generally avoid liability because plaintiffs and government research programs are unlikely to conduct scientific research on their own. Voluntary safety research, on the other hand, might reveal a long term risk associated with a product, a revelation that could provide vital evidence for aggressive plaintiffs' attorneys and ultimately increase, rather than reduce, the manufacturer's exposure to lawsuits and potentially catastrophic liability . The failure of the common law courts to provide manufacturers with reliable immunity after the manufacturer has conducted an exemplary safety testing program exacerbates the self-incriminatory effect of voluntary safety research' (Wagner 1997) .

In terms of the main United States OHS legislation, the OSH Act, imposes minimal requirements on manufacturers and related third parties to meet government standards, with only minor exceptions (e.g. the Respiratory Protection Standard-29 CFR 1910.134). However, the OSH Act does require designers to comply with standards of the National Fire Protection Association and the American National Standards Institute, and with specific construction safety requirements.

Beyond this, what liabilities manufacturers and designers do have to design and produce safe equipment are the result essentially of product liability laws. To the limited extent that product liability and other laws do have application to OHS, the obligations of designers are broad: 'The person who designs equipment or plans an operation may not only commit an error in calculations, but be guilty of failing to remove or control a hazard, or of omissions in failing to incorporate desirable features as safeguards to prevent accidents or protect personnel. When a designer or planner cannot completely *eliminate* a hazard or the possibility of an accident completely, her or she must attempt to *minimize* the possibility that other personnel will commit errors leading to mishaps, in effect, the designer, through foreseeability, must attempt to make the system 'idiot-proof' (Hammer 1989: 145).

Although product liability judgements have raised manufacturers' sensitivity to producing safer products, these penalties (liability judgments) are imposed after major injuries occur, and may not have an impact on routine workers' compensation injuries, claims or OSHA citations against employers.

Designers of buildings/architects (as distinct from those designing/manufacturing products) are accountable for an applicable standard of care: the degree of care applied to the competence of the professional. They can no longer shield themselves from third party claims under claims of privity of contract with the owner and it is clear that designers will now be embroiled in the liability for which the general contractor has in the past, been responsible, and indeed have responsibility extending to the contractor (*W.H.Lyman Construction v Village of Gurnes*, 84, Ill.App.3d28, 403 N.E.2d 1325, 1980).

PART III - CONCLUSION: EVALUATION, TRENDS AND STRATEGIES

This final section identifies a number of current trends, comments on the overall implications of the findings for possible strategies for influencing the major 'upstream groups' and also indicates likely changes in relevant statute law. There is such considerable overlap between these tasks that, to avoid duplication, they are dealt with together. We do so under four headings: (i) recent trends and initiatives; (ii) the role of process based standards; (iii) expanding the range of duty holders and design sectors; and (iv) enforcement and statutory terminology.

Recent Trends and Initiatives in the Jurisdictions

- From discussions with representatives of the jurisdictions: (i) there is support from stakeholders for performance-based regulation (especially Victoria), for a greater focus on control at the design stage and placing a duty on those who supply products to workplaces. This is consistent with the recently drafted *Draft Occupational Health and Safety (Manual Handling) Regulations* (Vic) *1999*; (ii) educating for safe design (and information-based strategy) needs to be built into the total life-cycle educational processes of professionals and other potential obligation bearers (Queensland). The need to introduce concepts of OHS safe design into degree/tertiary courses is recognised by NSW, Queensland, Victoria and South Australia. NSW is promoting this through its Year 2000 Construction Project. South Australia has a program for integrating OHS into tertiary courses; and (iii) general support for a performance-based emphasis was evident provided that innovation in safety design methods and techniques could be encouraged but leaving greater discretion with the obligation bearer (Australian Capital Territory and South Australia).

- Legislation should be written in plain English so that the obligation bearers can understand their duties and responsibilities. The Plant Safety Trainer's Guide provided by WorkCover (South Australia) has been developed specifically with this in mind, to assist in the development of an understanding of OHS legislation and duties. The Guide addresses the full life-cycle of an item of plant and includes coverage of the responsibilities that designers, manufacturers, importers, suppliers, owners, and installers and erectors have under the Regulations. Also, the 'Safer at the Source (Plant)' project has included designers etc. The project is designed specifically to assist manufacturers and suppliers of machinery and equipment to meet their obligations under the South Australian legislation. Rural communities have special information needs as do overseas suppliers (Western Australia).

- The New South Wales WorkCover Authority envisages three issues as fundamental to long-term OHS reform: extending the application of OHS management systems; building OHS into the

design of construction projects; and building OHS into vocational competencies and relevant tertiary curricula. As a forum to discuss these and other longer term reform initiatives, WorkCover has established a WorkCover Construction Industry Reference Group which is a bipartite committee representing a range of stakeholders in the construction industry and which meets monthly to debate current issues, consider ways of influencing the tertiary curriculum and advise Workcover. This consultative process aims to ensure that government programs are relevant, practical, timely and meet the needs of industry (see Shaw 1998).

- There is the need to improve the amount of contact between industry and government bodies responsible for the legislation and regulation of OHS (South Australia). Partnerships between different stakeholders are illustrated in New South Wales where the Government has adopted a *Memorandum of Understanding* with signatory construction contractors with the support of the construction industry, trade unions and employer associations 'to remove or minimise potential workplace hazards at the point of design to ensure a safer work environment'.

- A review of existing national standards and jurisdictional construction-based legislative frameworks undertaken by NOHSC for *Draft National Standard for Construction Work* emphasized the 'inefficiencies in the application of regulation, inconsistencies in scope, coverage and responsibilities of regulations, and gaps in construction-specific control' (NOHSC 1996: 44). The report also noted that: 'A major impetus for the development of a national approach for construction work has been the need to reform the myriad of existing Acts and Regulations relating to construction work in the jurisdictions' (NOHSC 1996: 44). If the development and adoption of a national standard for construction work is pursued it is highly likely that legislative provisions in the various jurisdictions will be remodelled in the future to accommodate the requirements of a new standard. Such a development would help to alleviate concerns of construction firms, operating nationally, which need to comply with the various, and often inconsistent, legislative requirements, standards and codes of practice in the individual jurisdictions. The current approach lacks uniformity across jurisdictions and while the national standards have alleviated this problem, even here, the way in which these standards have been adopted in individual jurisdictions still does not provide for full uniformity. Uniformity is desirable in the interests of OHS, of efficiency, and minimising the costs of manufacturers and others working across a number of jurisdictions with conflicting and confusing legislation. A rational strategy would be to continue to pursue uniformity wherever practicable.

The Role of Process-Based Standards

- There is a general trend to replace outdated prescriptive regulations with broader based performance standards, in conjunction with process standards. This trend is apparent both within

Australia (e.g. the National Standards on Plant/Hazardous Substances) and internationally (e.g. the *Process Safety Management Rule* (USA), the *Construction (Design and Management) Regulations* (UK), and the *Health and Safety Framework* and daughter Directives in the European Union). The most important characteristic of such measures is their approach to managing hazards by incorporating the three fundamental steps of hazard identification, risk assessment and risk control (underpinned by a series of either principle-based (i.e. general duties) or performance-based standards). Under the National Standards approach, and indeed under the legislation of individual jurisdictions, this trend is likely to continue.

- The advantages of process-based approaches over prescriptive regulation, are well known (see Gunningham & Johnstone 1999, chs 2 and 3). In brief, a considerable limitation of both traditional prescriptive specification standards and of performance standards is that they do not encourage enterprises to improve OHS over and beyond the legal limits prescribed. They do not encourage continuous improvement or industry best practice. Nor do they directly encourage enterprises to develop a safety culture or 'build in' safety considerations at every stage in the production process. In contrast (although principle-based standards , such as the general duty provisions, do have a capacity to move over time with changes in technology and community expectations) process-based regulation, incorporating the *procedures* for achieving the desired result, can do far more, by obliging duty holders to review procedures to assess risks, and to evaluate and improve those procedures. For example, the UK *Construction (Design and Management) Regulations* aim to establish an atmosphere of loss prevention in the construction industry by the introduction of risk assessment and clarification of client and contractor statutory duties and accountabilities throughout the whole design, construction, operation, maintenance and demolition process. In this way the Regulations appear to have addressed the factors identified in earlier research as demotivating construction management.

- Regulators should recognise that process-based approaches are most appropriate when the desired OHS outcome cannot be clearly specified, and where there is evidence that the specified process will result in better OHS outcomes. There will, however, still be situations in which other types of OHS standards will be more appropriate, or at least should operate in tandem with process-based standards. For example, in relation to hazardous substances, it might be possible to specify a minimum achievable target that *must* be achieved by suppliers or manufacturers. There may also be instances where the regulator can say with confidence that a particular safeguard is, and will remain, the most effective and efficient means of preventing work-related illness. In those circumstances, detailed technical specification standards may still be a desirable form of regulation.

- Perhaps the greatest challenge for the 'next generation' of regulation is twofold: (i) to integrate process-based standards into a full-blown organisational and systems-based approach, since it is only the latter which can provide a coherent strategy for addressing OHS in an entire enterprise or across an entire facility. This approach holds out the possibility of building in continuous improvement and cultural change within the organisation (see further Gunningham & Johnstone 1999, chs 2 and 3). For example, an integrated control system recognises the interdependency between all aspects of safe design and accepts the importance of a quality management-based information strategy promoting the benefits of safe design; and (ii) to successfully integrate process safety management techniques (which focus on management systems) with the use of engineering design standards (which address equipment performance). This synthesis, by combining methodologies and approaches (e.g. integrating design and operations, design engineers can benefit from the first-hand knowledge of operating personnel and vice versa), will help enterprises achieve both safety and profitability goals (see Sutton 1999).

Expanding the Range of Duty Holders and Design Sectors

- While the current Australian OHS Statutes impose duties on designers, suppliers, manufacturers and importers only in relation to plant and substances, it would appear that the broad general duties imposed upon employers and self-employed persons in relation to persons other than employees can be interpreted to impose duties upon consultants (contractors) supplying services and management systems to business organisations. This development would ensure that the obligations upon designers and suppliers are not confined to workplace 'hardware', but extend also to less tangible management systems which have just as much potential to give rise to worker ill-health. In Victoria and Queensland these duties would appear to go as far as imposing OHS duties on persons who design and develop business systems and supply those systems to small business operators under a licence arrangement (commonly known as business format franchises).

- These developments in the interpretation of the employer and self-employed person's duties to non-employees are significant, but need to be supported by more explicit provisions in the OHS Statutes or Regulations. For example, OHS regulators might consider drafting regulations which make it clear that anyone supplying services, management systems, or business systems to another is responsible for ensuring that that service or system does not place any person at risk, and does not require any person to engage in tasks which might involve risks to their own health, or to the health of others.

- The traditional approach to responsibilities of 'upstream' target groups has been to impose obligations on only a limited range of groups rather than across the entire supply chain. This resulted in unnecessary gaps in liability and a failure to address OHS across the entire life cycle of

the article, substance or activity. A number of specific points in the supply chain where such gaps existed were identified earlier. These gaps include: franchisors, contractors and sub-contractors, distributors, retailers, advertisers, repairers, second-hand goods dealers, purchasers, auctioneers, and small business. In some instances these new duty holders can be readily identified as a sub-group of the existing duty holders (e.g. franchisors under employers to non-employees, contractors and sub-contractors under duty on employer/self-employed in relation to non-employees, and distributors and repairers might be suppliers in some cases). However, the definitions of supplier and manufacturer are unclear, and are generally limited to plant and substances, and not to services. In some jurisdictions there have been attempts to fill these gaps. For example, the WA Act has specific provisions that impose responsibilities on persons who design and construct buildings and structures. NSW is contemplating imposing similar requirements and a rational strategy would be to do so on a comprehensive basis. In particular, the preferable approach is to adopt a 'cradle to grave' approach of assigning responsibilities to all people in the chain from designers to employees.

- Although a life cycle approach to identifying obligation bearers suggests that legislation may need to incorporate an expanded number of groups of obligation bearers, an alternative perspective suggests that safety problems should be completely designed out of products at the design phase. Quality management systems encourage a management philosophy that accepts the need for continual improvement in all of these aspects of safe design but, in particular, quality management emphasizes the ideal of zero incidents related to unsafe design. The inference is that all aspects of unsafe design should be eliminated in a systematic, integrated way.

- An alternative approach to best practice OHS management is the use of a hierarchy of control mechanisms to mitigate identified risks. All jurisdictions' legislation has some form of hierarchy of control with engineering controls at the top. For example, the Workcover Authority of NSW (1995) outlined their 'hierarchy of control' in a six-point approach to implementing OHS systems. Engineers and architects are key parties to the design of plant and equipment and buildings and structures. Heading the Workcover 'hierarchy of control' is engineering controls. Discussion of these controls begins with a statement that there should be an attempt to ensure that hazards are 'designed out' when new materials, equipment and work systems are being planned for the workplace. When designers cannot completely eliminate a hazard or the possibility of an accident, they must attempt to minimize the possibility that other personnel will commit errors leading to mishaps. The word 'error' in designing includes more than making a mistake in calculation. It also includes any design that is technically practical but is improper, inadequate, or unsuitable for the intended operating conditions.

- Changes are also necessary to expand the range of ‘design sectors’ covered particularly with regard to construction. Construction work presents particular problems in terms of safe design. A major European Union research project concluded that 35 per cent of fatalities investigated in the construction industry could be attributed to failure to properly identify hazards and control risks during the design process (Totterdell 1996). Analysis of injuries associated with construction work has shown that the industry has many workplace hazards which are unique and are not catered for by other national standards. In many cases there is a failure to adequately address the duties and responsibilities of persons involved in the various stages of the life cycle of buildings and structures. Overall, construction and maintenance safety in the design stage of an industrial project is not widely practiced in Australia (Trethewy 1998).

- The Australian general duties imposed upon designers extend only to designers of plant, and not to designers of buildings and other types of construction work (although there are more specific provisions with respect to construction and the provisions already mentioned in the WA OSH Act s 23(3a)). Yet the way in which a building is designed may give rise to significant OHS risks to those who have to construct the building, and who maintain and clean it after construction. It is important, therefore, that the OHS statutes require designers of building and construction projects to take into account OHS concerns. As indicated earlier, a possible model for such a duty is to be found in the European Community 1992 *Directive To Implement Minimum Health and Safety Requirements at Temporary or Mobile Construction Sites* (the Construction Sites Directive) (see at *Designers of Buildings* above).

- It is noted above that safe design is the responsibility (amongst others) of designers, but designers are not well defined in a systematic way in Australia as a group of obligation bearers. Unless individual groups of obligation bearers are well defined, the assessment of what are common obligations for all groups and what are specific obligations for individual groups will be misunderstood and/or misapplied. It could be suggested that any change in legislation should clarify the exact criteria for each target group (but see below).

- Existing statutes and regulations tend to confuse the roles of obligation bearers (e.g. a manufacturer does this, a supplier does that) when in fact the functions often overlap and are interchangeable. Similarly, an employer 'wears several hats' and may assume the function of a designer in the workplace when new plant and equipment is being modified, of a manufacturer, or of a supplier when selling plant second hand. It is the control of the design and design-associated activity that leads to a responsibility as an obligation bearer, not their classification as a manufacturer, supplier, etc. In short, consideration could be given to the identification of a set of risk related activities of functions rather than focussing on obligation bearer groups. If this was achieved then education and training ‘down stream’ would be far less significant and less

necessary. As most jurisdictions now regulate (or set performance standards) for a set group of obligation bearers (designers, manufacturers, suppliers, importers, etc.) it would be possible to devise simplified OHS legislation that is generally applicable to all relevant obligation bearers involved with certain, specified risk-based activities. A totally safe design package could be encouraged through a continual improvement approach to functional risk management in the safe design process. There is a need to manage the functions that lead to risk rather than focus on the groups responsible for risk (Australian Capital Territory).

Enforcement and Statutory Terminology

- Given the importance of the duties imposed on manufacturers, designers and others, and in particular the strategic role that these duties can play in removing workplace hazards at source, it is worth noting that very few prosecutions have been brought under the provisions of the Australian OHS Statutes (Johnstone 1997:267), although common law actions are somewhat more frequent. The absence of a credible enforcement strategy is a matter for concern. In the UK, the Health and Safety Executive, after a period of seeking to cajole and educate rather than prosecute designers and similar 'upstream' groups, in 1996, recognised the need to send a stronger signal to recalcitrants and successfully prosecuted an architect for breach of the *Construction (Design and Management) Regulations*. Occasional similar action is desirable in Australia.

- One reason that OHS enforcement agencies are experiencing difficulties in bringing enforcement action for breaches of the duties imposed upon legislated obligation bearers is that the breach of the obligation will usually take place at the time of the design or supply of, for example, plant, but may only be detected much later in the process, outside the time (the limitation period) within which the agency can take enforcement action. Some OHS Statutes have been amended to prevent this problem arising (see, for example, s 49(1) of the OSHA (NSW)), others still need similar amendment.

- The term 'when properly used' which permeates most Australian statutes concerning design and manufacture of articles and substances, has no useful purpose and seriously conflicts with the more recent risk assessment approach. The probability and consequences of improper use are matters which should necessarily be included in any risk assessment. To exclude it is antithetical to that process and provides an undesirable loophole which seriously weakens that approach.

- The 'old style' requirements for plant and substances (which were highly detailed, prescriptive and specification-based). Like their UK equivalents, they fail to provide an adequate level of protection in a number of important respects. In 1984, the UK Heath and Safety Executive, responding to union and worker concern, published a series of proposals intended to remedy some of the most serious of the limitations of the UK provisions. Since Australian and UK provisions

are very similar, these proposals (as summarised by Creighton & Rozen 1997: 82) are equally pertinent to most of the Australian requirements: the interpretations of 'when properly used' excludes situations where even quite foreseeable operator error had contributed in some measure to the creation of unsafe conditions (see further the analysis above); the fact that suppliers and other obligation bearers can make available instructions and other information as to 'proper use' with which it is almost impossible to comply, and thereby avoid the effect of the provisions; the term 'for use at work' has been used to exclude the storage, carriage and even processing of substances; doubt as to whether the legislation extends to hazards associated with the cleaning and maintenance of articles (plant), as opposed to their use to produce goods and services; the information requirements appear to be too narrow, for example because they do not extend to the supply of additional information as it becomes available, or as to proper means of storage or disposal; and the fact that prohibition notices can be issued only in the face of imminent risk, whereas often the most effective point at which to eliminate risk associated with unsafe articles (plant) and substances is at the point of manufacture, import, supply etc. and before there is any imminent risk. To the extent that Australian jurisdictions choose to stay with the present form of provisions then the language of the relevant statutes needs to be modified to overcome the above deficiencies.

- As indicated earlier the failure to consistently implement the National Standard for Plant is causing confusion and may seriously threaten the effectiveness of the standard. It is recommended that all jurisdictions: agree to the principle of functional independence for design verification; agree to develop a list of comparable international design standards for plant acceptable in all jurisdictions; and agree that the requirement for documented risk assessment will be substituted for inspection by a competent person (Lynch and Russell 1998)).

- Publication of ISO 9000 series and the terminology standard (ISO 8402) has attempted to bring some harmonization on an international scale to national standards that in many cases have proved inconsistent and confusing (Lack 1996:606). The ISO 9000-9004 and the American National Standards Institute (ANSI)/American Society for Quality Control (ASQC) Q90-Q94 series documents contain information relevant to systematic management for product and service development, design, production, and installation activities, including safety and health aspects. OHS aspects relate to matters such as purchasers requirement specifications, development planning, process control, risk considerations for the customer, quality in specification and design, design review and product safety and liability. For companies conducting business internationally ISO 9000 has become a worldwide quality *de facto* standard, over and beyond specific domestic regulatory requirements. Emphasis upon adoption of and compliance with international quality standards should be integrated into the standard development process, if serious attempts are going to be made to promote and encourage world's best practice.

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