



**National Research Centre for Occupational  
Health and Safety Regulation  
Regulatory Institutions Network (RegNet)**



## **Towards a Regulatory Regime for Safe Design**

### **A review of regulatory approaches and enforcement strategies**

**December, 2002**

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**December, 2002**

**A report prepared by the  
National Research Centre for Occupational  
Health and Safety Regulation  
Regulatory Institutions Network (RegNet)**

## About the Centre

The National Research Centre for Occupational Health and Safety Regulation is a research centre within the Regulatory Institutions Network, in the Research School of Social Sciences, at the Australian National University. The Centre is funded by the National Occupational Health and Safety Commission (NOHSC).

The aims of the Centre are to:

- conduct and facilitate high quality empirical and policy-focused research into OHS regulation, consistent with the National Occupational Health and Safety Strategy (NOHSS);
- facilitate and promote groups of collaborating researchers to conduct empirical and policy-focused research into OHS regulation in each of the States and Territories;
- facilitate the integration of research into OHS regulation with research findings in other areas of regulation;
- produce regular reports on national and international developments in OHS regulation;
- develop the research skills of young OHS researchers; and
- assist in the development of the skills and capacities of staff of the NOHSC Office.

In order to achieve these aims the Centre undertakes research, supports a consortium of OHS regulation researchers in Australia, assists in the development of skills and capacities of staff of NOHSC staff and collaborates in research programs with other Australian and international research centres.

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## Executive Summary

### I. Overview of the Report

This report reviews current regulatory approaches relevant to "safe design", that is, a strategic approach concerned with eliminating hazards and controlling risks to health and safety "at the source", as early as possible in the life cycle of designed-products. This review is a basis for exploring possible future directions for regulation and enforcement, to lead and encourage safe design.

In **Parts One to Four**, the report discusses regulatory approaches and strategies to safe design that are currently used in Australia and in some overseas jurisdictions. The regimes reviewed include: the Australian OHS statutes and subordinate legislation; the regulation of machinery safety and construction site safety in the European Union; the product safety provisions of Australian trade practices law; building safety requirements; and the regulation of electrical equipment safety in Australia. The application of common law principles of negligence to designed-products is also discussed. While examples were sought from other countries, the European regimes provide the most developed examples of regulation relevant to safe design.

The report presents some detail about each of the regulatory regimes, for readers who would like to understand how specific regimes operate. To the extent relevant to a particular regime, the discussion of that regime is structured to cover: (1) the relevant legal instrument(s), (2) the area of law and its administration (3) scope and application of the law; (4) who has responsibility; (5) the core provisions and elements of the legislation; (6) whether, and if so how, the duties are qualified; and (6) enforcement matters. However, for readers who prefer a shorter summary, "Progressive Summaries" are presented throughout the report to provide an overview of key information.

The report is structured to address regulation relevant to four types of designed-products: (1) plant; (2) buildings, structures and other construction projects; (3) business systems; and (4) substances. This is not an exhaustive set of designed-products. However, these are key sources of risks at work and some of the principal examples of regulation relevant to safe design are represented by these products.

**Parts Five and Six** of the report draw together the preceding discussion of regulatory regimes to consider possible future directions for regulation and enforcement of safe design. Some broad principles and elements are canvassed. These principles and elements are not presented as a "blueprint" but rather as the basis for discussion of possible features of safe design regulation and enforcement policy. It is proposed that they be considered in relation to each of the designed-products to determine approaches suitable for each. They can also be applied to other designed-products, as appropriate.

## II. Key Insights from the Review of Regulatory Regimes for Safe Design

### (i) Plant - Machinery, Equipment, Appliances and Tools

The Australian OHS statutes and regulations expect upstream parties to address OHS matters in relation to plant. In broad terms there are duties to ensure that plant is designed and constructed so that it does not present risks to safety or health. There are also requirements to apply a risk management process, to test or examine plant, to provide information, and for design verification for certain high risk plant. Australian OHS law creates somewhat different responsibilities in each Commonwealth, state and territory jurisdiction. There is variation both in regard to which upstream parties have responsibilities and the nature of the duties. These differences are compounded by differences in OHS regulations and evidentiary standards. This variable regime is problematic, especially in relation to the upstream duties, as plant is supplied between jurisdictions within Australia, as well as into and out of this country. If regulation is to encourage and enable safe design of plant, consistency and clarity about what is required are essential characteristics. The features and sources of variation in the Australian OHS regulation of plant are discussed in **Section 3**. There is scope both to address the issue of national consistency and also to consider the nature of provisions, to establish provisions that effectively lead and support upstream parties to ensure safe design.

In the European Union, the *Machinery Directive* is concerned with the safe design of plant as well as critical safety components of plant. This regime is reviewed in **Section 4** of the report. An interesting feature of this regime is the requirement to address "essential health and safety requirements" which draw attention to a comprehensive range of hazards and problems that could arise with plant. However, manufacturers (or others responsible) may choose to apply relevant harmonised standards. These are an important source of technical guidance about safe design and construction for particular types of plant or safety components, as well as for particular aspects of OHS, for example ergonomic aspects, and for processes such as risk management. There is a "presumption of conformity" for machinery and components that comply with relevant standards. Most plant is subject to a process of self-assessment by the manufacturer who maintains a technical construction file with details of the design and how OHS has been addressed. However, third party technical assessment, by an independent and competent, "notified body" is required for some types of plant. This is the "EC type examination". Before plant can be placed on the market or put into service the CE mark must be applied and a "declaration of conformity" is made by manufacturer, declaring that the plant complies with relevant essential health and safety requirements. There are elements of the European Union's regime that are worth considering in Australia.

Unlike Australian OHS law or the European Union's *Machinery Directive*, which have a preventive focus, the Australian *Trade Practices Act 1974* (TPA) focuses principally on the kind of action that can be taken against a corporation (manufacturer or importer) for supply of goods in an unsafe or defective condition. There is less focus on preventive health and safety requirements. Nonetheless, as discussed in **Section 5**, action can be taken to restrict or prohibit supply of unsafe goods. There is provision for gazettal of warning notices, restrictions on supply, a permanent ban or compulsory recall of unsafe goods. Voluntary recalls of defective goods are encouraged and must

be notified. A range of sanctions are also established by the TPA including fines, Court imposed injunctions to prevent specific conduct, Court orders to disclose information in a public advertisement and enforcement of undertakings entered into with the regulatory authority. There may be opportunities for cooperation between OHS inspectorates and the Australian Competition and Consumer Commission (or its state/territory counterparts). Some of the TPA's strategies to remedy product safety problems are also worth considering as part of an OHS regulatory regime for safe design.

Some items of equipment that are electrically powered are subject to specific regulation by electrical regulatory authorities in Australia, as discussed in **Section 6**. A uniform approvals scheme, is administered by state/territory authorities. This involves testing by an accredited testing facility, approval and application of an approval number before the equipment can be placed on the market. The system aims to regulate both locally made and imported electrical equipment, with a focus on pre-sale compliance and compliance checks by enforcement officers at sale outlets. The requirement for an approval number on designated items provides enforcement officers and purchasers with a means to check compliance. A national register is maintained (by the Queensland authority) of recalled electrical equipment.

In summary, the review of Australian OHS law in relation to plant as well the regulatory regimes for machinery safety in Europe, and the regimes for product safety and electrical equipment in Australia, highlights some potential problem areas as well as some opportunities to enhance the regulation of safe design in Australia. These ideas are developed in Part Two of the report and summarised in the 'Conclusions About Regulation for the Safe Design of Plant'.

## **(ii) Buildings, Structures and Other Construction Projects**

Traditionally, the Australian OHS statutes have not regulated safe design in relation to buildings and structures. They have focused on the construction phase, where the responsible parties are the principal contractor or sub-contractors, with responsibilities under the duties of care of employers and self-employed persons. However, the South Australian OHSW Act and regulations, and the Western Australian OSH Act do address this. The South Australian legislation is the most developed as it quite comprehensively identifies a range of OHS matters to be addressed by duty holders from designers and owners of buildings, to designers of structures, manufacturers, importers and suppliers of structural materials and those who erect structures. The SA regulations provide a useful model for identifying a range of OHS matters to be addressed by upstream parties. This approach is discussed in **Section 7**.

The *Building Code of Australia* (BCA) is the principal instrument for regulating the activities of architects, engineers and others involved in the design of buildings and some structures. This is discussed in **Section 8**. The BCA does cover a range of health and safety matters but a number of OHS matters relevant to design are not addressed. In particular the BCA is not concerned with safe design to minimise risks to those involved in the construction phase. The approach taken by the BCA may be a useful model for safe design regulation. It allows designers flexibility to select materials, components, forms of construction and designs that suit a particular building or

structure. In particular, it does this by a mix of mandatory performance-outcome provisions that establish the required level of performance, and building solutions that set out a means of complying with the performance requirements. (See Section 2.5 for an explanation of types of provisions). As the primary reference point for building designers the BCA is arguably the most logical place to incorporate requirements for safe design, to address OHS for those involved in the construction phase as well as end use and occupancy. However, this would involve a change in the scope of the BCA. An alternative approach would be to adopt the BCA approach, with which designers are familiar, but to apply this approach under the OHS statutes.

In the European Union, a rather different approach has been taken through the *Construction Site Directive* which has now been transposed into national legislation by all Member states. The Directive is outlined in **Section 9**. It is concerned with improving planning and coordination in the design and the construction phases of building and civil engineering construction projects. The “client” (the person for whom a project is carried out) or the “project supervisor” (a person acting on behalf of the client) have primary responsibility. Employers and self-employed persons are also responsible during the construction (project execution) phase. In most Member states, designers do not have specific obligations although they do have a role to play. Coordinators appointed by the client are expected to work with designers to facilitate attention to OHS issues in the design phase. Some countries take this further by designating specific responsibilities for designers. Key requirements are the development of a “safety and health plan” and a “safety and health file”. Construction projects must also be notified to the relevant competent authority.

An aspect of the *Construction Site Directive* that is of particular interest is the emphasis on safe design to address OHS risks to those involved in construction as well as maintenance, repair and cleaning of the finished structure. However, the evidence so far about the effectiveness of this Directive and the associated law of member states is at best equivocal. There are grounds to consider whether a regulatory regime based on coordination and development of documentation, in the form of OHS plans and OHS files, is the appropriate approach for an industry in which small business is predominant. There is also concern that designers of construction projects may need more assistance in identifying construction methods, components and materials that meet traditional design criteria of fitness for purpose and aesthetics, as well as the OHS aspects of constructability. In this regard, designers may be assisted by development of OHS performance-outcomes and design solutions (an approach similar to the BCA).

In summary, the review of Australian OHS law in relation to buildings, structures and other construction projects, as well the regulatory regimes for building safety in Australia and construction site safety in Europe, highlights some gaps in the regulation of safe design in this area, as well as some opportunities to enhance regulation in Australia. These ideas are developed in Part Three of the report and summarised in the 'Conclusions About Regulation for Safe Design of Buildings, Structures and other Construction Projects'.



### **(iii) Business Franchising Systems**

The blueprint for operating a business franchising system developed by a franchisor may specify the form of work premises, machinery and equipment, substances and work methods (or some combination of these) to be used by the franchisee and his/her employees. The system design and plans developed by the franchisor may significantly influence the OHS of those working to the blueprint, in business franchises downstream. While a well-designed system can enhance health and safety, a poorly designed one can impose risks on others that may be difficult for the franchisee (as the employer) to address in the context of the binding contractual agreement of the franchise. As discussed in **Section 10**, some of the duties under the Australian OHS statutes may apply to franchisors, subject to specific contractual arrangements. However, none of them specifically apply to business franchising systems. Some starting points for regulation in this area are the duties of employers and self-employed persons to others under the Victorian and Queensland OHS statutes, which require attention to risks arising from the "conduct of the undertaking". However, this is a very broad duty. It would be helpful to clarify the kinds of risks that a franchisor should address.

### **(iv) Workplace Substances**

Internationally, the established approach to regulating workplace substances begins with the testing and evaluation of substances in order to classify their toxicological as well as physico-chemical properties. This information then provides the basis for producing labels and material safety data sheets. As discussed in **Section 11**, the Australian regime for regulating workplace "hazardous substances" is consistent with this and applies European directives on classifying substances. The Australian regime for "dangerous goods" is also consistent with international requirements. Arguably there is scope to place greater emphasis on safe design in the development of workplace substances by emphasising: (1) elimination of particularly hazardous ingredients or substances; (2) modification of substances, for example, by changing chemical composition of composite materials, mixtures and formulations; (3) designing packaging to minimise risk of hazardous exposure; and (4) elimination or control of risks in the design of processes for the manufacture of substances (controlling risks at source for workers exposed to substances in production). In this regard, it is noteworthy that the Australian OHS statutes typically require upstream parties to ensure that substances are "safe and without risks to health". It is doubtful whether this could be satisfied, in the case of particularly hazardous or dangerous substances, by classification and information provision alone.

## **III. Principles and Elements of Regulation for Safe Design**

In **Part Five, Section 12** we outline some principles and elements to be considered in developing possible future directions of regulation to promote safe design. The principles and elements are not necessarily exhaustive, nor are they all necessarily applicable to each type of designed-product. It is suggested that they provide a basis for determining regulatory approaches most applicable to particular types of designed-products, as it is likely that they will require somewhat different approaches.

The following matters are discussed in this part of the report:

- (i) Options for achieving a **nationally consistent regulatory regime** including: (1) template OHS legislation adopted in an identical form by each jurisdiction; (2) national OHS legislation adopted by the Commonwealth government using a relevant Constitutional "head of power"; or (3) integration of OHS requirements for safe design into another national or nationally coordinated regulatory regime, for example the *Building Code of Australia 1996* or the *Industrial Chemicals (Notification and Assessment) Act 1989*.
- (ii) Approaches to assigning **responsibility** by either: (1) assigning the same duties to any person responsible for procurement, design, manufacture, construction, import, supply, installation, erection, commissioning (as appropriate to each designed-product), requiring that OHS is addressed as far as "practicable", and to the extent of the person's control; or (2) assigning different duties to different parties, for example, so that a person who designs has different duties to a person who supplies.
- (iii) Core **processes for systematic management** of safe design, that is: (1) risk management; (2) testing and examination; and (3) information provision. For each of these core processes we discuss the importance of guiding and focusing the activities of those involved in safe design by defining OHS performance outcomes and/or providing guidance in the form of evidentiary standards.
- (iv) Use of **performance-outcome provisions** to define OHS outcomes to be achieved while leaving open the means for achieving them.
- (v) Use of **evidentiary standards**, including technical standards, to describe acceptable methods or ways of achieving OHS outcomes.
- (vi) **Technical assessment or design verification** as a means of ensuring that OHS matters have been addressed with high risk products before they are placed on the market. This requires the involvement of independent and technically competent persons and agreed technical criteria or standards.
- (vii) Forms of **documentation** to record action taken to address OHS, for example, by technical files and OHS plans, to assist inspectors, procurers and third party assessors to evaluate safe design.
- (viii) Application of a **safe design mark** and **declaration of conformity** to signal that action has been taken to address safe design matters.
- (ix) **Notification** as a process of alerting relevant authorities to particular designed-products, early in the life cycle, to enable a strategic response.
- (x) Definition of **OHS competencies** for safe design as a strategy to ensure that those involved in safe design functions are equipped with relevant OHS knowledge and skills.

- (xi) Use of the expression "**practicability**" (as applied in each jurisdiction) to provide the necessary qualification of duties, and removal of the expression "when properly used" as it gives a false impression about reliance on warnings rather than ensuring that a designed-product is inherently safe, as far as "practicable", and conflicts with the common law.

#### **IV. Principles and Elements of Enforcement Policy for Safe Design**

In **Part Six, Section 14** we outline some principles and elements to be considered in developing possible future directions for enforcement policy tailored to safe design. As with the discussion of regulatory provisions for safe design discussed in Part Five. The principles and elements of enforcement policy are not necessarily exhaustive, nor are they all necessarily applicable to each type of designed-product. It is suggested that they provide a basis for determining enforcement responses most applicable to particular types of designed-products.

The following matters are discussed in this part of the report:

- (i) The need for enforcement policy to make an explicit **commitment** to address safe design in the enforcement activities of OHS authorities.
- (ii) **Consistent enforcement policy and practice** across jurisdictions and for equivalent circumstances, so that the same response is applied to contraventions of a similar type, wherever they occur in Australia, and whether they arise in relation to "Australian-made" or imported products. A consistent approach to enforcement requires a cooperative and coordinated approach by enforcement agencies, applying a consistent range of enforcement strategies and sanctions.
- (iii) **Strategic enforcement** which emphasises a proactive, targeted approach to enforcement. The most suitable enforcement measures may not be the same as those used for regulating the actions of employers or workers. In particular, enforcement should be aimed at preventing unsafe designed-products from entering the market, or being put into use, or being constructed (in the case of buildings and structures). Measures are also required to deal with unsafe products that are identified, that ensures that the relevant upstream parties take appropriate action to remedy the situation.
- (iv) **Responsive enforcement** which involves tailoring the response to the nature of non-compliance and taking into account compliance history. It begins with efforts to inform and persuade responsible parties and provides for an escalation of response when this is warranted. Duty holders have the opportunity to comply voluntarily with advice and guidance, but a range of alternative action might be taken if non-compliance persists.

- (v) **Measures to persuade** and promote voluntary compliance including:
  - (a) *engaging* with upstream duty holders to discuss how OHS performance-outcome provisions have been addressed and/or how relevant evidentiary standards applied;
  - (b) *auditing safe design management practices*, focusing on the core processes and arrangements for risk management, testing and examination of products; and information provision;
  - (b) *voluntary third party technical assessment* to enable confirmation, from a competent authority, that hazards have been adequately identified and eliminated or controlled;
  - (c) *auditing of procurement practices* in employers' OHS management systems to ensure that purchasing procedures, contracts procuring specific items, design briefs and tender documents specify OHS requirements;
  - (d) *voluntary notification of unsafe products* to OHS inspectorates (by procurers) where the purchaser's efforts to have problems rectified by the "supplier" are unsuccessful;
  - (e) voluntary implementation of a "*safe design compliance program*" which involves establishing systems to manage safe design requirements. Such an agreement could also be the basis of an agreed undertaking with the OHS authority (that is, an "enforceable undertaking", see (vi)(c) and (viii (d) below);
  - (f) *voluntary recall* of hazardous products (or components) and notification to the relevant authority.
  
- (vi) Measures to give **formal direction** to duty holders:
  - (a) *targeted inspections and audits* with follow up direction;
  - (b) issue of *improvement and prohibition notices* to give formal direction in relation to contraventions (which would require amendment of the OHS statutes in some jurisdictions);
  - (c) requirement to enter into an *enforceable undertaking* with the relevant authority, for example, to establish a "safe design compliance program" or to review and improve a design to the satisfaction of the regulator (breach of such an undertaking would be enforceable by the court).
  
- (vii) Measures to **warn and protect procurers** of designed-products:
  - (a) investigation of hazardous designed-products and publication of a Ministerial *warning notice* in the relevant government *Gazette* advising of specific product risks and action taken to restrict supply or use;
  - (b) investigation of hazardous designed-products and publication of a Ministerial notice advising of *mandatory product recall* and/or *restrictions on sale* and/or *advice* to procurers.
  
- (viii) Measures to **deter non-compliance**:
  - (a) *penalty or infringement notices* ("on-the-spot" fines) for specific safe design offences;
  - (b) refusal of *design registration* (eg high risk plant) or *approval* of a new development (eg construction projects or hazardous substances);
  - (c) investigation of a hazardous designed-product and *prohibition of supply* by publication of a Ministerial notice in the relevant government *Gazette*;

- (d) *enforcement of undertakings* entered into with the relevant authority, where the undertaking has been breached - if the inspectorate considers that the person who gave the undertaking has breached any of its terms, it may apply to the Court for an order to direct the person to comply, to pay a fine, or to make another order ;
- (e) application by the relevant authority to the court to grant an *injunction* in relation to particular conduct;
- (f) investigation and *prosecution* of serious and/or persistent breaches (amendments are required to most OHS statutes so that the time period for initiating a prosecution commences from the time the alleged offence is detected, for example, 18 months from detection of the alleged offence); and
- (g) penalties imposed by a court if a prosecution is successful to include:
  - *fines* (set at the same level in all jurisdictions);
  - *court order* to disclose information and/or publish an advertisement; and
  - other forms of *corporate probation* such as an order to implement arrangements to manage safe design processes.

## V. Summary

In summary, there is a range of possible futures for regulation to promote safe design and for enforcement policy to persuade, direct, warn and deter. The regulatory regimes reviewed in this report provide considerable food for thought. They are presented in some detail to enable readers of this report to draw on different sources in developing proposals. The key principles and elements discussed in Parts Five and Six of the report are designed to give some focus to discussion of possible future regulation and enforcement of safe design. In determining the best "mix" of regulatory provisions and enforcement strategies it should be kept in mind that behavioural change occurs with the right balance of elements to develop knowledge, capacity and motivation to comply.

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# **PART ONE**

## **Preliminary Concepts and General Issues**

Part One outlines the scope of the report and discusses some preliminary concepts and general issues that underpin the report. It outlines the different designed-products and the life cycle phases that might be regulated. Common law principles of negligence are discussed. The type of statutory instruments used to regulate OHS matters are identified and the style of regulation is outlined, as well as the ways in which statutory duties are qualified (for example practicability). The issue of "consistency" is raised and some different dimensions of this are canvassed.

# 1. Introduction

## 1.1 Overview of Safe Design

"Safe design" is concerned with eliminating hazards and controlling risks to health and safety "at the source", as early as possible in the life cycle of the items that comprise workplaces, or are used or encountered at work. This includes work premises, structures, plant, substances, work methods and systems of work. A safe design approach begins in the planning and design phases with an emphasis on making choices about the design, methods of manufacture or construction, and or materials used which enhance the safety of the designed-product.

The importance of safe design is highlighted by national analysis of work-related fatalities undertaken by the Epidemiology Unit of the National Occupational Health and Safety Commission (NOHSC, 2000). This revealed that for fixed plant and equipment, in 52% of incidents leading to fatalities (117 out of 225 incidents), a design problem was a contributing factor to the incident. There were a further 46 fatalities in which one or more design problems were contributing factors.

Important work on safe design was undertaken in various reports commissioned by NOHSC as part of its *Safe Design Program*. These include:

- Caple (2000) *Discussion Paper: Assessment of Policy Implications Arising from Research Undertaken for the Safe Design Project*;
- Gunningham, Johnstone and Burritt (2000) *Review of Occupational Health and Safety Legal Requirements for Designers, Manufacturers, Suppliers, Importers and Other Relevant Obligation Bearers*;
- Cowley, Culvenor and Knowles (2000). *Review of Literature and Review of Initiatives of OHS Authorities and Other Key Players*;
- McGregor Tan Research (2000) *NOHSC Safe Design Project Market Research*.

On 24 May 2002, the Workplace Relations Ministers' Council (WRMC) endorsed the release of *The National OHS Strategy 2002–2012* (NOHSC, 2002a). The strategy is a landmark development signifying the commitment of all Australian governments, as well as the Australian Chamber of Commerce and Industry and the Australian Council of Trade Unions, to work cooperatively on national priorities for improving OHS and to achieve minimum national targets for reducing the incidence of workplace deaths and injuries.

*The National OHS Strategy* identifies safe design as one of five national priority areas. The strategy expresses the commitment to "eliminate hazards at the design stage" (NOHSC, 2002a). A *National Priority Action Plan 4 (2002-2005)* has been developed to set down the action to be taken by the National Occupational Health and Safety Commission, its member organisations and others, to pursue this priority (NOHSC, 2002b). The action plan identifies several strategies, the first of which concerns improvement of the regulatory framework.



Key activities to be undertaken by NOHSC, in pursuing the strategy of improving the regulatory framework for safe design are:

- review of the regulatory framework and development of improvement options;
- development of consistent enforcement strategies;
- building safe design principles into national/state/territory standards and codes of practice.

This report aims to provide foundations for the regulatory review and development activities of the NOHSC, in relation to safe design. The report reviews current regulatory approaches relevant to safe design, as the basis for exploring possible future directions for regulation and enforcement, to lead and encourage safe design. The report is not directive; it does not provide a "blueprint" for new legislation or enforcement. These are matters properly to be debated in NOHSC's tripartite forums. Some guiding principles and possible elements of a regulatory regime for safe design are canvassed in the report, drawing on the insights from the review of regulation and enforcement practices. These are intended to provide a basis for discussion and consideration of the regulatory regime for safe design.

## **1.2 Scope and Structure of the Report**

This report discusses regulatory approaches and strategies to safe design that are currently used in Australia and in some overseas jurisdictions. The focus is on the early life cycle phases of a range of items which comprise workplaces, are used at work or which provide systems of work.

These items are the "designed-products" (after NOHSC, 2002c). The designed-products discussed in this report are:

- plant (machinery, equipment, appliances and tools);
- buildings, structures, other construction projects and structural materials (including safe design for safe construction as well as safe end use);
- substances; and
- business systems (especially business franchising systems).

The report is presented in five parts. **Part One** discusses some preliminary concepts and general issues which underpin the report. It outlines the different designed-products and the life cycle phases that might be regulated. Common law principles of negligence are discussed. The type of statutory instruments used to regulate OHS matters are identified and the style of regulation is outlined, as well as the ways in which statutory duties are qualified (eg practicability). The issue of "consistency" is raised and some different dimensions of this are canvassed.

**Parts Two to Four** of the report review existing regulatory regimes in Australia and some overseas countries that are relevant to each of the main designed-products. For each regime discussed, information is presented about: (1) the relevant legal instrument(s); (2) the area of law and its administration; (3) scope and application of the law; (4) the party upon whom responsibility is placed; (5) the core provisions and elements of the legislation; (6) whether, and if so how, the duties are qualified; and (6) enforcement matters.

**Part Five** draws together the preceding discussion of regulatory regimes in Australia and overseas to consider possible future regulation of safe design. Some broad principles and elements for the regulation of safe design are canvassed. These principles and elements are not presented as a "blueprint" but rather as the basis for discussion of possible features of safe design regulation.

**Part Six** of the report discusses current enforcement strategies and practices of the Australian OHS inspectorates. Some guiding principles and a range of strategies and sanctions are canvassed as possible constituents of enforcement policy tailored to safe design.

**Part Seven** of the report presents the 'Conclusion' and **Part Eight** contains the references and the appendices that support the report. The appendices include a glossary of key terms and concepts (Appendix 1). These definitions help to explain the intended scope and meaning of terms used in the report. There is also some specific information about particular regulatory regimes such as the list of harmonised standards used for safe design of machinery in Europe (Appendix 2), the essential health and safety requirements for machinery safety (Appendix 3), and a matrix indicating the scope of duties of building designers in South Australia (Appendix 4).

### **An Important Note About Reading This Report**

There is a wealth of information available about different regulatory regimes that are of interest in reviewing the regulatory regime for safe design. This report attempts to do these different sources justice by including description and analysis of provisions as a resource for regulation review.

Some readers may prefer a shorter summary of the issues. This is possible by reading Part One which covers some general background issues, Part Five which contains the discussion of principles and elements for regulation of safe design and Part Six which discusses enforcement strategies. These cross-reference core material on different regulatory regimes.

Extensive use is also made of "Progressive Summaries". These summary boxes are presented throughout the report to assist in drawing together key concepts.

## 2. Preliminary Concepts

### 2.1 Types of Designed-products

Occupational fatalities, injuries and disease arise from exposure to hazards at work, which is often the result of complex interactions between different contributing factors. These factors include: the way that occupational health and safety (OHS) is managed; human factors such as fatigue and stress, competency and experience; and technical factors that include the design, construction and maintenance of equipment and processes (see for example Waring, 1996: 159-160 ; Bohle and Quinlan, 2000: 7-35).

Fundamental to the safe design approach is the elimination or control of hazards at the source. Traditionally, primary emphasis has been placed on the role of the employer in providing and maintaining a safe work environment, safe systems of work, and plant and substances that are in a safe condition (see Johnstone, 1997: chapter 5, for an overview of the employer's responsibilities under Australian OHS legislation). As well as the ongoing management of OHS in organisations, the employer may also influence design matters - for example, in determining systems of work used within the organisation, or in specifying design requirements for plant or equipment, work premises, systems of work or specifying the ingredients and packaging of substances procured.

However, all aspects of safe design are not within the control of the employer and there are particular areas where effective protection of OHS requires action by others who are in a position to influence safe design and construction. Unless such action is taken, key sources of hazards will continue to be fed into the design of workplaces, equipment, substances, processes and systems of work. Employers and workers on the receiving end will have to deal with the inherent risks.

There are some key areas in which safe design is crucial, in order to address some of the more prevalent sources of hazards at work. In this report these key areas are referred to as the "designed-products" (after NOHSC, 2002c) as follows.

- (1) The first type of designed-product is **plant** which includes a wide range of machinery, equipment, appliances and tools used at work. Whether plant is designed and constructed to be safe, or not, has an impact on different aspects of use including installation and erection of the plant, operation, maintenance, repair, cleaning and responses to plant failures or blockages.
- (2) The second type of designed-product is the **buildings, structures and other construction projects** that consist of or comprise many workplaces. The **materials** used in the construction of these also contribute to health and safety aspects of the work environment. Design considerations are important both for persons involved in construction work, as well as for the end users and those involved in maintenance, repair, cleaning and future modifications.
- (3) The third type of designed-product is **business systems**. A special case of business system, the business franchising system is discussed in this report. Special attention is deserved because of the prevalence of franchise arrangements and the way in which the franchisee is required, by contractual arrangements, to implement a complete business system as specified by the franchisor. This

- system may specify particular premises (or features of these), use of machinery or equipment of a particular design and/or substances of a particular type.
- (4) The fourth type of designed-product is **substances**. This includes substances which may be hazardous to health due to toxicological properties and those which are dangerous due to physico-chemical properties such as flammability or explosivity.

While this is not an exhaustive set of items which are designed and for which there might be an OHS impact, it covers many of the items that consist of or comprise workplaces, are used or otherwise encountered at work. They also represent the principal sources of law in regard to a review of regulation relevant to safe design. In Parts Five and Six of this report, which discuss possible future directions, we propose some general principles and elements for consideration in future regulation and enforcement. These can be applied to other designed-products, as appropriate.

## 2.2 Safe Design Phases

Each of the designed-products has a life cycle and conceptually there are different opportunities within the life cycle when action may be taken to improve the safety of the product. Table 1 below presents the key "upstream" phases for each of the designed-products.

The opportunities to create intrinsically safer workplaces, plant, substances and business systems are greater in the earliest life cycle phases of design, manufacture or construction. In these early phases it is possible to design out hazards and/or incorporate risk control measures that are compatible with the original design concept and functional requirements of the designed-product. The phases of installation and erection, in the case of plant and structures are also important in minimising risk. If risks can be eliminated or effectively controlled in these phases then OHS problems may be overcome for those who use or work with the product downstream. Items can actually be made safer at the source.

In contrast, by the time the designed-product is ready for import, supply or commissioning (in the case of a building) there are likely to be fewer opportunities to make the product inherently safer, although there may be possibilities for retrofit or modifications that can be made to improve OHS, if the supplier or customer is willing to make the associated expenditure.

A further phase is worth highlighting. This is the phase of procurement in which a client or customer may give specific directions or impose particular requirements, which influence the design and construction of the product. While the client/customer does not (in general) carry out design or construction, their requirements may serve to encourage the designer, constructor or manufacturer to have more regard to OHS matters. Conversely the client/customer's requirements may discourage or make it more difficult to address OHS matters. For example, the imposition of tight timeframes or budgetary constraints may make it difficult or impossible to address OHS matters. These client/customer requirements may be imposed by contract or simply in the selection of the product to purchase. For example, the client/customer may specify that a product must comply with particular OHS requirements.

For each of the designed-products, the key upstream phases in which OHS might be addressed are those set out in Table 1 below. In each case, the designed-product is identified and the relevant phases are listed. It is envisaged that OHS can be enhanced if each person who has control over action taken in any of these phases, takes steps to ensure that OHS aspects are effectively addressed.

It should be noted that all phases are not necessarily applicable to a particular product. Nor is any particular sequence of the phases implied. This may vary according to the product, as well as the relationship between the client/customer and the designer/producer. The definitions in Appendix 1 clarify the intended scope of the different phases.

**Important note:** For simplicity, this report uses the expression “safe design” to refer to action taken to eliminate hazards or control risks in any of these upstream phases. Reference to a “safe design phase” is a reference to any of the upstream phases as presented in Table 1.

**Table 1: Key Phases for Safe Design for Each Designed-Product**

<b>Plant and its components</b> Procure, design, manufacture, import, supply, install, erect, commission
<b>Buildings, structures and other construction projects</b> Procure, design, construct, erect, install, commission
<b>Materials of construction</b> Procure, design, manufacture, import, supply
<b>Substances</b> Procure, design, manufacture, import, supply
<b>Business and Work Systems</b> Design, supply

## 2.3 The Common Law and Safe Design

While the focus of this report is on possible reform of statute law it is pertinent to consider how the common law has dealt with safe design matters. In this regard it should be noted that although a number of the Australian states/territories have limited the opportunity for an employee to initiate common law action against an employer, this does not preclude an injured worker initiating common law action against a third party (see for example Heads of Workers Compensation Authorities, 2001, for a discussion of the scope of common law in relation to work-related injuries). Thus, in addition to possible action under statute law, a person who is negligent in the design,

manufacture, construction, installation, erection or supply of a product could face the prospect of a common law action initiated by an injured worker (or any other person who sustains injury or loss).

It is important to emphasise that the principles of negligence discussed in the following paragraphs apply to common law actions and should not be directly transferred to the interpretation of duties under statute law (Creighton and Rozen, 1997: 69-70). Nonetheless, the principles of negligence do give insight into what is expected of designers, manufacturers and others in this area of the common law, as well as the type of action that may be required to minimise the risk of legal action.

To be successful in a negligence action a person will first have to prove that a duty of care was owed by the designer, manufacturer, supplier or other upstream party. There is no question that upstream parties may be liable under common law. Indeed the case that is regarded as the foundation of the modern law of negligence involved a claim against a manufacturer. In *Donoghue v Stevenson* [1932] AC 562, explained that:

"[a] manufacturer of products, which he sells in such a form as to show he intends them to reach the ultimate consumer in the form in which they left him with no reasonable possibility of intermediate examination, and with the knowledge that the absence of reasonable care in the preparation or putting up of the products will result in an injury to the consumer's life or property, owes a duty to the consumer to take that reasonable care". (*Donoghue v Stevenson* [1932]: 599)

In this particular case, the duty of care was owed by a manufacturer to a consumer. However, subsequent cases have established that a range of other parties might owe a duty of care, and not only to consumers but also to persons who use, in the course of employment, a product obtained by the employer.<sup>1</sup> A duty of care may be owed by a designer (including an architect or engineer); a manufacturer of both finished end-products as well as component parts; a supplier including a retailer, wholesaler, distributor, hirer, repairer and dealer in second-hand goods.

Once it is established that a duty of care is owed, a person must then prove that: (1) the acts or omissions of the designer or manufacturer (etc) breached the standard of care required to discharge the duty of care; (2) that the breach caused injury, disease or other damage in the sense that, but for the breach of the duty, the injury, disease or damage would not have occurred; and (3) that the injury or damage was not too remote in that it was a reasonably foreseeable consequence of the negligent acts or omissions (see Brooks, 1993: 221-229 and Johnstone (1997: 508 -509, for discussions of the basic principles of negligence).

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<sup>1</sup> See, for example:

*Bevan Investments v Blackhall and Struthers* [1973] 2 NZLR 45.

*Cuckow v Polyester Reinforced Products Pty Ltd* [1970] 19 FLR 122.

*Greaves and Co (Contractors) Ltd v Baynham Meikle* [1975] 3 All ER 99.

*Griffith v Arch Engineering Co Ltd* [1968] 3 All ER 217.

*Howard v Furness Houlder Argentine Lines Ltd* [1936] 2 All ER 781.

*Voli v Inglewood Shire Council* [1963] 110 CLR 74.

*Wright v Dunlop Rubber Co Ltd* and *Cassidy v Dunlop Rubber Co Ltd* [1972] 13 KIR 255.

This is well explained by Ipp, Cane, Sheldon and MacIntosh (2002: 102-103) in their report on the future of negligence actions in Australia. They explain that under current Australian law, the issue of the breach of the duty of care (ie (1) above) has two components: "foreseeability of risk of harm" and the so-called "negligence calculus". They outline these two components as follows.

"Foreseeability of the risk of harm is relevant to answering the question of whether the reasonable person would have taken any precautions at all against the risk and, hence, whether the defendant can reasonably be expected to have taken any precautions. It would not be fair to impose liability on a person for failure to take precautions against a risk of which they had neither knowledge nor means of knowledge. Foreseeability is a precondition of a finding of negligence: a person cannot be liable for failing to take precautions against an unforeseeable risk. But the fact that a person ought to have foreseen a risk does not, by itself, justify a conclusion that the person was negligent in failing to take precautions against it.

Once it has been determined that the risk in question was foreseeable, the negligence calculus provides a framework for deciding what precautions the reasonable person would have taken to avoid the harm that has occurred and, hence, what precautions the defendant can reasonably be expected to have taken. The calculus has four components:

- (a) the probability that the harm would occur if care was not taken;
- (b) the likely seriousness of that harm;
- (c) the burden of taking precautions to avoid the harm; and
- (d) the social utility of the risk-creating activity." (Ipp et al, 2002: 102-103)

Several points are important to emphasise. Firstly, the standard of care is a question of fact to be determined in court by a judge (or jury, if there is one). Secondly, foreseeability is not a matter of what a person knows and nor is it a matter of the probability of harm occurring. Foreseeability is a matter of what a "reasonable person" in their position would have known. Hence the expression "*reasonable* foreseeability" is used (Ipp et al, 2002:104).

Thirdly, the question of whether it is reasonable to take precautions to avoid harm, and if so, what precautions, are resolved by asking what precautions the reasonable person would have taken (Ipp et al, 2002:104). Again the test is objective and the question is answered in terms of the four elements of the negligence calculus. Here probability of harm is a consideration but regardless of whether the probability of harm is high or low, it is only one element in the calculation along with the likely seriousness of that harm, the burden of taking precautions and the social utility of the risk-creating activity (Ipp et al, 2002: 105).

According to Brooks (1993: 239-241), case law suggests that there are practicable precautions that a designer, manufacturer or supplier can take to guard against negligence. These measures are as follows.

Once a danger or defect is foreseeable, so far as reasonable, all practicable precautions should be taken to eliminate the danger or defect by alteration of the product. This requires research and testing to determine if such alteration of the product is

practicable and, if so, making the alteration. If alteration is not practicable, and the danger is sufficient, recall from the market is required. If alteration is not practicable and either the danger is sufficient to warrant withdrawal, or the danger is great but the product cannot be withdrawn, then the product must be accompanied by adequate and comprehensive warnings. Importantly, "insufficient warnings will result in liability just as will a complete absence of warnings" (Brooks, 1993: 240).

Thus the law of negligence when applied to the liability of designers, manufacturers and suppliers, suggests that quite apart from the separate requirements of statute law, they would be prudent to take certain action. Such action includes informing themselves about the risks of harm associated with their products; determining and taking precautions that are reasonable and practicable; ensuring research and testing of the product; ensuring that there is adequate and comprehensive warning of any residual risks; and, if warranted, recalling unsafe products from the market.

As we will see in later discussion of statute law, these are precisely the mechanisms reflected in the statutory duties of designers, manufacturers, importers and other suppliers, although they are not comprehensively covered in any one statute.

## **2.4 Types of Statutory Instruments in the OHS Legislative Framework**

There are three main types of legal instruments employed in the regulation of OHS in the Australian jurisdictions. Firstly, there are the principal OHS statutes that establish general obligations on a range of parties. They also establish the arrangements for enforcement of OHS legislation. There are ten OHS statutes in Australia. The titles of these Acts are presented in Table 2 (which also includes abbreviations of the titles of the Acts as used in this report). Each of the OHS statutes applies widely to workplaces and work activities in the jurisdiction, with the exception of mining and/or petroleum operations in Queensland, Northern Territory and Western Australia.<sup>2</sup>

The Australian OHS statutes impose duties on a range of parties whose actions have the potential to impact upon OHS. These include designers, manufacturers, importers, suppliers, installers and erectors (amongst others). These parties have a role in ensuring OHS in relation to particular designed-products, which varies according to the jurisdiction. As summarised in Table 3 the areas most commonly regulated are the design, manufacture, import, supply, installation and erection of plant; and the manufacture, import and supply of substances. Regulation of the design of buildings and structures is rare, but does occur in two jurisdictions (SA and WA). Business systems are not specifically regulated in any jurisdiction although it is possible that the duties of employers and self-employed persons to others might extend to the design/supply activities of licensors of business systems in some jurisdictions

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<sup>2</sup> WHSA (Qld) does not apply to mining and petroleum operations (WHSA (Qld) s 3); and OSHA (WA) does not apply except as declared by the Minister (OSHA (WA) s 4). The OHS provisions in Part IV of WHA (NT) do not apply to mines (WHA (NT) s 28A); and the provisions of OHSA (NSW) relating to the powers of inspectors, notification of accidents, investigation, improvement and prohibition notices do not apply to mines (OHSA (NSW) s 5).



(Johnstone, 1999: 106-107). The application of the OHS statutes to each of the designed-products is discussed in detail in Parts Two to Four of this report.

**Table 2: Australian OHS Statutes and Regulations<sup>3, 4</sup>**

<b>Jurisdiction</b>	<b>OHS Statute</b>	<b>Abbreviation</b>
Australian Capital Territory	<i>Occupational Health and Safety Act 1989</i> <i>Occupational Health and Safety Regulations 1989</i> <i>Approved Code of Practice: National Standard for Plant (NOHSC, 1994)</i>	OHSA(ACT) OHSR(ACT) ACOP NSP (ACT)
Commonwealth government	<i>Occupational Health and Safety (Commonwealth Employment) Act 1991</i> <i>Occupational Health and Safety (Commonwealth Employment)(National Standards) Regulations 1994</i>	OHS(CE)A (Cwlth) OHS(CE)(NS)R
Maritime industry	<i>Occupational Health and Safety (Maritime Industry) Act 1993</i> <i>Occupational Health and Safety (Maritime Industry) Regulations 1995</i>	OHS(MI)A OHS(MI)R
New South Wales	<i>Occupational Health and Safety Act 2000</i> <i>Occupational Health and Safety Regulation 2001</i>	OHSA (NSW) OHSR (NSW)
Victoria	<i>Occupational Health and Safety Act 1985</i> <i>Occupational Health and Safety (Plant) Regulations 1995</i> <i>Code of Practice - Plant 1995</i>	OHSA (Vic) OHS(P)R (Vic) COP(P) (Vic)
South Australia	<i>Occupational Health, Safety and Welfare Act 1986</i> <i>Occupational Health, Safety and Welfare Regulations 1995</i>	OHSWA (SA) OHSWR (SA)
Western Australia	<i>Occupational Safety and Health Act 1984</i> <i>Occupational Safety and Health Regulations 1996</i>	OSHA (WA) OSHR (WA)
Northern Territory	<i>Work Health Act 1986</i> <i>Work Health (Occupational Health and Safety) Regulations 1992</i>	WHA (NT) WH(OHS)R (NT)
Queensland	<i>Workplace Health and Safety Act 1995</i> <i>Workplace Health and Safety Regulation 1997</i>	WHSWA (Qld) WHSR (Qld)
Tasmania	<i>Workplace Health and Safety Act 1995</i> <i>Workplace Health and Safety Regulations 1998</i>	WHSWA (Tas) WHSR (Tas)

<sup>3</sup> Note that some jurisdictions have other regulations made under the OHS statute. The regulations listed in Table 2 contain the key provisions in relation to safe design.

<sup>4</sup> Note also that Table 2 does not include all technical standards such as Australian Standards which may be called up in regulations or given evidentiary status as approved codes of practice or advisory standards (Qld). The codes listed are ones that contain material otherwise included in the OHS regulations in other jurisdictions.

The second form of statutory instrument is the regulations that are made under the principal OHS statutes. These generally impose requirements relating to the control of specific hazards and may include processes to be applied, for example provision of information and training, hazard identification, risk assessment and risk control, and consultation with workers. Regulations address a wide range of OHS matters which may include safe design matters. Regulations are mandatory and must be complied with. Failure to comply with the provision of a regulation may in itself be an offence. Some of the principal OHS regulations for each jurisdiction are included in Table 2.

Thirdly there are evidentiary standards that have been given legal status by their formal approval, usually by the responsible Minister and often involving a process that gives Parliament the opportunity to disallow the standard. As the generic name suggests, these standards are “evidentiary” rather than mandatory as the party responsible has the option to follow the standard or take alternative action that gives an equivalent or better level of protection. There are various types of evidentiary standards including “approved codes of practice” as they are known in all jurisdictions except Queensland. These approved codes of practice may be industry focused (industry codes of practice). The evidentiary standards are different from other forms of guidance documents because of the legal status conferred upon them by the formal approval process.

In Queensland the relevant evidentiary standards are “advisory standards”, industry codes of practice and “Ministerial notices” (WHS Act (Qld): s 41 and 42C). A Ministerial notice may be issued by the Minister on a matter involving a risk of serious bodily injury (WHS Act (Qld): s 42C). In the event of proceedings against a person for contravention of a statutory obligation, it is a defence for the person to prove that s/he adopted and followed the way to prevent contravention as stated in a Ministerial notice, advisory standard or industry code of practice. However, the person may also prove that s/he adopted and followed another way that managed exposure to the risk, and took reasonable precautions and exercised proper due diligence to prevent the contravention (WHS Act (Qld): s 37).

Regulations, approved codes of practice and advisory standards (Qld) may apply, adopt or incorporate other documents or publications. Frequently, model regulations, standards and codes of practice developed by the National Occupational Health and Safety Commission (NOHSC) have been incorporated in whole, in part or by reference within regulations or evidentiary standards. Relevant NOHSC standards and the jurisdiction’s regulations, codes and evidentiary standards giving effect to these are discussed further in Parts Two and Four of this report in relation to plant and substances.

The technical standards of Standards Australia and other recognised standards bodies often provide benchmarks for the design, manufacture or construction of plant, equipment, buildings and structures, amongst other products. They may be mandatory if actually called up in regulations (compliance with the standard is written into the regulation as a requirement). They may also have legal status as an evidentiary standard if approved as an approved code of practice or advisory standard (Qld). However, whether or not they have any formal legal status, Australian Standards and other technical standards are widely used as a source of advice about how to address particular risks in the design process.

**Table 3: Designed-Products and Duties Under the Australian OHS Statutes**  
(from Bluff, 2002)

<b>Duty</b>	<b>Plant</b>	<b>Buildings</b>	<b>Structures</b>	<b>Substances</b>	<b>Business systems</b>
<b>Design</b>	Q, NSW, V, SA, WA, Tas, NT	SA, WA	SA, WA	NSW, NT	
<b>Manufacture</b>	Q, NSW, V, SA, WA, Tas, NT, ACT, Cwlth, MI		SA	Q, NSW, V, SA, WA, Tas, NT, ACT, Cwlth, MI	
<b>Construct</b>		WA	WA		
<b>Import</b>	Q, V, SA, WA, Tas, NT, ACT, Cwlth, MI			Q, V, SA, WA, Tas, NT, ACT, Cwlth, MI	
<b>Supply</b>	Q, NSW, V, SA, WA, Tas, NT, ACT, Cwlth, MI		SA	Q, NSW, V, SA, WA, Tas, NT, ACT, Cwlth, MI	
<b>Erect</b>	Q, NSW, V, SA, WA, NT, ACT, Cwlth, MI		SA		
<b>Install</b>	Q, NSW, V, SA, WA, Tas, NT, ACT, Cwlth, MI				
<b>Employer/self-employed re business systems<sup>5</sup></b>					Q, V

<sup>5</sup> In some jurisdictions the duty to others (not employees) might be interpreted to encompass risks arising from the conduct of a franchising business.

## 2.5 Style of Provisions

Australian OHS legislation uses provisions drafted in different styles to meet different objectives. According to Gunningham and Johnstone (1999: 22):

“In designing OHS standards, it is vitally important to determine what *types* of standards to adopt. For example, what kinds of measures are most likely to achieve best policy outcomes? What techniques are most likely to influence organizational behaviour, to be flexible, produce safety and health benefits at an acceptable cost, provide practical guidance to employers, and to be easy to enforce? Decisions about these issues will have major implications not only for regulators, the parties responsible, and potential victims of work-related injury and disease, but also for the overall effectiveness of the regulatory regime.”

The different styles of provisions incorporated in OHS legislation, are general duties, systematic process-based standards, performance-based standards and specification standards. Some definitions of these are as follows (drawn from Baldwin and Cave, 1999: 118-120; Gunningham, 1996: 222-229 and Gunningham and Johnstone (1999: 23):

- a *general duty* (also known as a *principle*) is a broad statement which does not specify either the outcome or the measures to be taken (except in very general terms), but which requires the obligation bearer to exercise care, as far as is reasonably practicable, in an activity;
- a *systematic process* identifies a particular process, or series of steps, to be followed in the pursuit of safety (eg hazard identification, risk assessment and control);
- a *performance* provision specifies the outcome of the OHS improvement but leaves the measures to achieve this outcome open to the obligation bearer to adapt to particular circumstances;
- a *specification* provision is a prescriptive standard which tells the obligation bearer precisely what measures to take and is expressed in terms of specific types of safeguarding measures that must be used (eg a requirement for an emergency stop button of specific dimensions, shape and colour).

A further type of provision is a *documentation* requirement. This type of provision requires the obligation bearer to document the measures taken to comply with a general duty, performance or process-based standard.

It is helpful to differentiate further the types of performance style provisions. Firstly, there are performance provisions for which achievement of the OHS outcome is measurable, for example the exposure standards for noise or for substances. In this paper these are referred to as “performance-target” provisions. Secondly, there are performance provisions that describe an OHS outcome. An example is: “machinery must be designed and constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering the internal parts.” In this paper the term “performance-outcome” provision is used for this second type of performance style provision.

Although contemporary OHS statutes and regulations are frequently described as “performance-based” they in fact typically combine provisions of different styles. They include general duties, systematic processes, a few performance-outcome provisions (as defined above) and some specification provisions. The use of genuine performance-target or performance-outcome provisions (as defined above) is rare in current Australian OHS legislation. Indeed there is scope to consider greater use of performance-outcome standards in particular, as a means to provide some practical direction about the OHS outcomes to be achieved, while retaining the flexibility as to how this is done. The style of provisions drafted in regulation is not only a means of describing provisions. Along with the content of provisions, the style requires careful consideration as it has important implications for the effectiveness of the regulatory regime, its implementation by those with responsibilities, and for enforcement.

## **2.6 Qualification of Duties**

In Australian OHS legislation, the duties are typically qualified by the expression “so far as reasonably practicable” (“practicable” or “reasonable precautions” and “proper diligence” according to the jurisdiction). This concept is widely used in the Australian OHS statutes, regulations, approved codes of practice and advisory standards, and strongly resembles the common law calculus of negligence (as discussed in Section 2.3 above). It is a means of weighing up, on the one hand, the risk of illness or injury occurring against, on the other hand, the sacrifice involved in the measures to remove the risk (taking into account technological feasibility, cost etc). For example, in Victoria (OHSA (Vic): s 4) this is expressed as weighing up the severity of the risk in question; the knowledge about the risk and ways of removing or mitigating it; the availability and suitability of ways to remove or mitigate the risk; and the cost of removing or mitigating the risk (Creighton and Rozen, 1997: 58-61).

Recently the High Court considered the meaning of “reasonably practicable” in *Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR 304. In a common law action for breach of statutory duty, an injured worker sued the designer of a structure, namely the floor fume extraction at the Whyalla blast furnace of BHP (as it was at the time injury occurred). The duty under consideration was the duty of the designer of a structure under the South Australian *Occupational Health Safety and Welfare Act 1986* (s 24(2a)(a)). Thus the case turned on whether the designer had ensured “so far as is reasonably practicable” that the structure was designed so that persons required to erect it would be safe from injury. Liability was denied on the basis that the designer (Lurgi) had ensured the safety of the design so far as is reasonably practicable.

With reference to a number of cases the High Court summarised the interpretation of “reasonably practicable” as follows:

“... the words "reasonably practicable" are ordinary words bearing their ordinary meaning. And the question whether a measure is or is not reasonably practicable is one which requires no more than the making of a value judgment in the light of all the facts. Nevertheless, three general propositions are to be discerned from the decided cases:

- the phrase "reasonably practicable" means something narrower than "physically possible" or "feasible";
- what is "reasonably practicable" is to be judged on the basis of what was known at the relevant time;
- to determine what is "reasonably practicable" it is necessary to balance the likelihood of the risk occurring against the cost, time and trouble necessary to avert that risk (*Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR: 322-323).

It is important to note that the Queensland *Workplace Health and Safety Act 1995* takes a somewhat different approach but nonetheless qualifies the duties of care. This Act requires the responsible person to comply with the provisions of regulations, ministerial notices, advisory standards or industry codes of practice, or if there are none of these, to take “reasonable precautions” and to “exercise proper diligence”. It is accepted that the expression “reasonable precautions” means that hazards are identified, risks are assessed, control measures are determined and implemented to prevent or minimise the risk, and “proper diligence” means that the effectiveness of control measures is monitored and reviewed (WHS Act (Qld) ss 22 and 37).

In summary, in the Australian OHS statutes the principal qualification of the duties of any person who designs, manufactures, constructs, imports or supplies, is practicability. Such a person can be expected to do what is (reasonably) practicable, to take reasonable precautions or exercise proper due diligence, given due consideration to the risks involved and available means of controlling them. However, it should be noted that in some specific provisions, in particular those relating to plant, the duties of care are further qualified, in some instances, by the concept of "proper use" or foreseeable misuse". Thus, for example, the duties in relation to the design, manufacture and supply of plant involve ensuring the plant will be safe "when properly used" or in the event of "foreseeable misuse". The wording depends on the jurisdiction and is discussed further in Part Two of this report, in the review of Australian OHS law as it applies to plant.

## **2.7 Consistency in Regulation of Safe Design**

In concluding the first part of this report and the discussion of general issues, it is important to raise the issue of "consistency". This has been identified as an area of concern in the context of Australian OHS legislation especially, for example, in relation to plant (Caple, 2000; Gunningham, Johnstone and Burritt, 2000; Lynch and Russell, 1998).

Australian jurisdictions have a chequered career in achieving consistency. Examples of some of the diversity in state/territory legislation based on the *National Standard for*

*Plant* is canvassed in Part Two of this report. While it is often argued that the combination of OHS statutory provisions, regulations and evidentiary standards is broadly consistent across jurisdictions, it does not seem that way to those who design, make and then supply across jurisdictional borders.

Undoubtedly, consistency (or inconsistency) between the Australian state/territory-based OHS legislation is a very important issue. It should also be noted that each OHS inspectorate has its own enforcement policy and strategy which gives rise to different approaches to enforcement of the law. However, there are other dimensions to the problem of consistency in regulation of safe design, that go beyond Australian OHS law and its enforcement.

In considering possible future directions for the regulation of safe design, it is important to appreciate that there are different areas of statute law that currently impact upon the regulation of safe design. Some examples of regulatory regimes discussed in Part Two of this report are drawn from the regulation of trade practices (consumer protection and product liability), as well as public safety in relation to buildings and electrical equipment. Thus OHS regulation already co-exists with other areas of regulation that impact upon safe design.

A third area of consistency is with imported products (especially plant). This was also flagged as an area of concern in earlier reports to NOHSC (Caple, 2000; Gunningham, Johnstone and Burritt, 2000). While some imported products originate in countries with little or no regulation of safe design, some are manufactured under highly developed regulatory regimes. For example, this is the case for plant produced to standards required for supply to the European Economic Area.

In summary, there are at least three dimensions to the issue of consistency to be kept in mind in reviewing the regulation of safe design. Although OHS law and its enforcement is state/territory based, some other areas of law are federal. Moreover, it is difficult to envisage an effective response to imported products that is not nationally coordinated. These issues are discussed further in Parts Two, Five and Six of this report.

At the conclusion of Part One we raise very seriously the question of whether the regulation of safe design matters should continue to be Commonwealth, state and territory based or whether it warrants a national approach. Readers are invited to keep this in mind as they contemplate the different regulatory regimes for safe design reviewed in this report and the possibilities for reform of safe design regulation in Australia.

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## **PART TWO**

### **Regulation of Safe Design of Plant**

Part Two reviews existing regulatory regimes in Australia and overseas that are relevant to the safe design of plant. Plant includes a range of machinery, equipment, appliances and tools.

Of the overseas regulation considered, the principal example is the European Union which regulates the design and manufacture of machines supplied for use at work as well as those supplied for non-occupational use. There are not examples of regulation of safe design for the United States where responsibility for plant safety is primarily placed on the employer, under the *Occupational Safety and Health Act 1970*.

For each of the regimes discussed, information is presented about: (1) the relevant legal instrument(s), (2) the area of law and its administration (3) scope and application of the law; (4) who has responsibility; (5) the core provisions and elements of the legislation; (6) whether, and if so how, the duties are qualified; and (6) enforcement matters.

Readers will find 'Progressive Summaries' through this part to help highlight key information.

### 3. Regulation of Plant Safety in Australian OHS Legislation

#### 3.1 Commonwealth and State/Territory Based Legislation

Plant is one of the priority areas identified for nationally consistent regulation under the Australian OHS statutes (Emmett, 1997). In 1994 the National Occupational Health and Safety Commission (NOHSC, 1994a) declared the *National Standard for Plant* which was to be the basis for a nationally consistent regime of OHS regulations, approved codes of practice or advisory standards (Qld), implemented by the Commonwealth, states and territories. The national standard was introduced at a time when mutual recognition legislation adopted by the Commonwealth and the states/territories had established that goods (including plant) that could be legally produced or imported into one Australian jurisdiction, could be lawfully supplied in all others without the necessity for compliance with further requirements (see for example *Mutual Recognition Act 1992*: s 9).

If the *National Standard for Plant* were adopted uniformly under OHS legislation in all jurisdictions, it was expected that the OHS standard of plant originating in one jurisdiction (by production or import), would be exactly the same as plant originating in any other jurisdiction. However, as the 1990s progressed, variable adoption of the *National Standard for Plant*, in conjunction with mutual recognition legislation, created a situation where it might be possible to legally supply, throughout Australia, an item of plant imported into or manufactured in one jurisdiction, that could not be legally supplied if it originated in another jurisdiction. Some employers found that they could purchase an item supplied legally in another state, but could not use it in their own jurisdiction.

The following review outlines the key features of the Australian OHS statutes, regulations, approved codes of practice and advisory standards as they apply to plant. The review also identifies some of the main sources of variation between jurisdictions.

**Important note:** every effort has been made to reflect the provisions for plant as they apply in the different jurisdictions. However, with more than 20 different instruments (excluding technical standards such as Australian Standards) this is a complex task. If any reader considers that any aspect of this review is not accurately reflected they are invited to advise the author so that the necessary amendments can be made.

#### 3.2 Scope of Plant

In the OHS statutes "plant" is defined broadly to include a range of machinery, equipment, appliances, and components or fittings of these.<sup>6</sup> The definitions are different in each Act, sometimes specifically including certain items of plant and in other cases using a broad definition to encompass all types of machinery, equipment,

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<sup>6</sup>See WHSA(Qld) Sch 3, OHSA(NSW) s4, OHSA(Vic) s4, OHSWA(SA) s4(1), OSHA(WA) s 3(1), WHSA (Tas) s 3(1), WHA (NT) s 3(1), OHSA (ACT) s 5(1), OHS(CE)A(Cwlth) s 5(1), OHS(MI)A s 4.

appliances and tools. In all cases the definition of plant embraces manually powered as well as power-driven plant.

Likewise the definition of plant contained in the *National Standard for Plant* (NOHSC, 1994a: s4) defines plant as including “any machinery, equipment (including scaffolding), appliance, implement or tool and any component or fitting thereof or accessory thereto.” In contrast, while still covering a broad range of plant, the OHS regulations and other evidentiary standards made under the principal OHS Acts have, in some jurisdictions, adopted a narrower definition of plant that focuses on non-manually powered plant (OHS(P)R (Vic): r 106(1) and (3); OHSW R(SA): r 3.1.3; OSH R(WA): r 4.22).

The statutory duties typically refer to plant for use “at work” or plant for use “at a workplace”. Nonetheless, specific definitions of plant contained in the relevant OHS regulations or, in Queensland, the *Plant Advisory Standard* make it clear that plant includes items of high risk plant whether or not these are used at work or situated at a workplace. This typically includes boilers and pressure vessels, lifts and cranes, scaffolding and amusement devices.

### **3.3 Responsibility for Ensuring Safe Plant**

Upstream duties in relation to plant are regulated under the OHS statutes in all Australian jurisdictions. This is summarised in Table 3 (refer to Part One), which indicates that manufacturers of plant have a duty of care under all of the OHS statutes, as do suppliers and installers of plant. Designers of plant have a duty of care under the OHS statute in most jurisdictions but this is not specified in the statutes for the Commonwealth, the ACT or the maritime industry. Importers have a specific duty in all jurisdictions except in NSW. However, the NSW *Occupational Health and Safety Regulation 2001* does give importers specific responsibilities in relation to plant (OHSR(NSW): r 85). Erectors of plant have an explicit duty of care in all jurisdictions except Tasmania.

The OHS statutes and regulations rarely define specific duty holders and when they do it is simply to define the duty holder in terms of the function. Thus, eg, a designer is a person who designs or is responsible for the design (OHSW Regs (SA): r 1.1.5(1); WHS Regs (Tas): Sch 1) and may also include a person who alters the design of existing plant so that new control measures are required (PAS (Qld): 3). A manufacturer is a person who manufactures plant (OHSW Regs (SA): r 1.1.5(1); WHS Regs (Tas): Sch 1). An importer is a person who imports plant (OHSW Regs (SA): r 1.1.5(1); WHS Regs (Tas): Sch 1) and includes a person who brings plant from outside the jurisdiction, from another state or territory, or from outside Australia (for example, PAS (Qld): s 3.1). Suppliers are more commonly defined and include persons who supply by sale, lease, exchange or hire (OSHA (WA): s 3(1); WHSA (Tas): s 3(1); WHS Regs (Tas): Sch 1).

This issue of definition of duty holders is important in view of the suggestion in previous reports to NOHSC (Caple, 2002; Gunningham et al, 2000: 63-64) that responsibilities should attach to all persons engaged in a particular function, for example, any person who designs plant (as distinct from “the designer”). In essence

the two approaches are interchangeable. There seems to be no difficulty in framing requirements to apply, for example, to any person responsible for the design, manufacture etc of plant. Indeed most of the OHS statutes already adopt this approach. Only the ACT, Commonwealth and Queensland OHS statutes frame the duties as applying to the "designer", "manufacturer" and so on. It would seem that this is possible, as recommended by Gunningham et al (2000: 64) " ... to devise simplified OHS legislation that is generally applicable to all relevant obligation bearers involved with certain, specified risk-based activities". It is possible to "... manage the functions that lead to risk rather than focus on the groups responsible for risk".

Although the precise wording of the upstream statutory duties varies between the OHS statutes, their scope is broadly similar. They typically involve some combination of: (1) ensuring that plant is designed and constructed to be safe, or ensuring that plant is in a safe condition; (2) testing and examination of plant; and (3) provision of information. Table 4 summarises the nature of the duties of designers, manufacturers, importers, suppliers, installers and erectors.

The nature of the duties of designers, manufacturers, importers and suppliers of plant is very broad as expressed in all of the OHS statutes. The relevant duty holder must not expose persons using the plant to hazards (OSHA(WA): s 23(1)(a); WHA (NT): s 30B) or risks to health and safety (WHSa(Tas): s 14(1)(a)), or they must ensure that the plant is safe and without risks to health (all other jurisdictions). A notable difference between the jurisdictions is that testing of plant before supply is not an explicit part of the duty of designers, manufacturers and importers in New South Wales and Tasmania, as it is in the other jurisdictions. In all jurisdictions, except Queensland, NSW and Tasmania, suppliers are also expected to ensure the safety of plant, to provide information and ensure testing. In Queensland the supplier's duty is to provide information and in New South Wales the supplier's duty is to ensure safety and to provide information. Queensland also distinguishes between the role of designers and manufacturers - the former are responsible for safe design and the latter are responsible for safe construction.

The duties of installers and erectors of plant focus on ensuring that it is erected and installed so as to be safe. They do not include testing or provision of information except that in NSW, where the term "manufacturer" is taken to include a person who installs, assembles or erects plant, the duty is the same as for a manufacturer. That is, those installing or erecting plant in NSW could be expected to both ensure the safety of the plant and arrange for provision of information about the plant.

The more detailed responsibilities relating to plant are found in the regulations and approved codes of practice (or advisory standard, Qld). These are discussed further below in relation to hazard identification, risk assessment and control for plant; testing; and information provision.

**Table 4 : Overview of OHS Statutory Duties in Relation to Plant<sup>7</sup>**  
(from Bluff, 2002)

<b>Jurisdiction</b>	<b>Designer</b>	<b>Manufacturer</b>	<b>Importer</b>	<b>Supplier</b>	<b>Install/erect</b>
<b>Queensland</b>	Safe design Testing Information	Safe construction Testing Information	Safe design Safe construction Testing Information	Information	Safe
<b>NSW</b>	Safe Information	Safe Information		Safe Information	Safe Information
<b>Victoria</b>	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe
<b>South Australia</b>	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe
<b>Western Australia</b>	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe
<b>Tasmania</b>	Safe design Safe construction Information	Safe design Safe construction Information	Safe design Safe construction Information	Safe design Safe construction Information	Safe
<b>Northern Territory</b>	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe
<b>Australian Capital Territory</b>		Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe Testing Information	Safe
<b>Commonwealth</b>		Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe Testing Information	Safe
<b>Maritime Industry</b>		Safe design Safe construction Testing Information	Safe design Safe construction Testing Information	Safe Testing Information	Safe

<sup>7</sup> Note that the table is indicative only of the types of matters addressed in specific duties. The table does not reflect the precise wording of the duties which varies between the jurisdictions and is also qualified in various ways, for example in relation to what is (reasonably) practicable and in relation to proper use or foreseeable misuse.

### **Progressive Summary – the OHS Statutes and Safe Design of Plant**

The Australian OHS statutes expect upstream parties to address OHS matters in relation to plant. In broad terms there are duties to ensure that plant is designed and constructed so that it does not present risks to safety or health. There are also requirements to test or examine plant and to provide information. However, the OHS statutes create somewhat different responsibilities in each Commonwealth, state and territory jurisdiction. There is variation both in regard to which upstream parties have responsibilities and the nature of the duties.

As we will see in the following sections, the differences between the OHS statutes is compounded by differences in OHS regulations and evidentiary standards, within and between jurisdictions. For a responsible designer, manufacturer or other upstream party, tracking requirements is time consuming and can be confusing. Moreover, mutual recognition legislation does not recognise these differences in relation to supply of goods. If plant can be legally supplied in the jurisdiction in which it is produced or imported, it can be legally supplied in another jurisdiction. However, an employer or self-employed person purchasing the plant will still have to ensure that the plant complies with the OHS requirements in the jurisdiction in which the plant is used at work.

To create a clear and transparent regulatory regime for the safe design of plant there are some key questions to resolve. First, what plant should be the focus of regulation? Second, which parties should have responsibility? Third, what are the key elements of responsibility (for example, ensuring that plant is designed and constructed to be safe and free from risks to health, as far as “practicable;”<sup>8</sup> ensuring that plant is tested and examined to identify residual risks; and ensuring that information is provided when plant is supplied). Fourth, which of these responsibilities are applicable to each of these parties? Fifth, are broad general duties sufficient or should more direction be provided? These matters are discussed further in the remaining sections of Part Two, and are taken up again in Part Five of this report.

### **3.4 Plant that is Safe "When Properly Used"**

In all jurisdictions the duties extend only to ensuring that plant is safe when properly used, although in South Australia it is expected that reasonably foreseeable forms of misuse will also be addressed (OHSWA(SA): s 24(1)(a)). Queensland and Victoria identify that plant is not to be regarded as properly used where it is used without regard to relevant/appropriate information or advice about its use (OHSA(Vic): s 24(4); WHSA(Qld): s 15).

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<sup>8</sup> For a discussion of the use of “practicability” and similar qualifying terms in OHS legislation, refer to Section 2.6 in Part One of this report.

This approach is different from the principles of negligence applied in common law actions as discussed in Part One of this report. In such cases foreseeability of risk of harm, as judged from what a reasonable person in that position would know, is the key to answering the question whether, and if so what, precautions should be taken. The duty holder is required to take all reasonably practicable precautions.

The approach taken by the South Australian OHSW Act is more consistent with common law principles of negligence, requiring duty holders to take account of reasonably foreseeable forms of misuse (OHSWA (SA): s 24). This is important as humans at work may fail to use machinery or equipment "properly" for a variety of foreseeable reasons - because they are fallible, fatigued, untrained or otherwise unable to "properly use" plant. However, in other jurisdictions incorporation in the duty of the expression "when properly used" has meant that it is possible, in at least some instances, to design, make and supply plant that has inherent risks, such as unguarded moving parts, and to rely on instructions and warning about the risks, as the sole precaution.

For example, in an earlier prosecution under Victoria's former *Industrial Safety, Health and Welfare Act 1981* a charge against the supplier of a lock seamer machine was dismissed (*Herless Pty Ltd v Barnes* [1986]<sup>9</sup>). Rollers of the machine were unguarded and had been supplied in that manner. There was also neither a manual nor instructions. The judge accepted the statements of industry witnesses that it was common practice for lock seamers to be unguarded and that if the machine was properly used it was safe, that is, if the operator held the material and stood away from the machine. The Industrial Relations Commission interpreted "when properly used" narrowly and no evidence was led to take account of dangers that might arise through error, fatigue, distractions or reflex actions (Johnstone, 1997: 265-267).

A similar approach was taken by Judge O'Shea in an unreported prosecution *Victorian WorkCover Authority v Chem-Mak Pty Ltd* [1999], under OHSA (Vic) s 24(1)(a) and 24(1)(b) (duties of designers, manufacturers, importers and suppliers of plant)<sup>10</sup>. An employee had sustained crushing injuries to his hand and arm when caught between the unguarded rollers of a textile brushing machine. The judge accepted that it was sufficient that representatives of the manufacturer had given instructions about proper use in advice to management and trained operators (but not the employee), that operators should keep their hands away from rollers and turn off the machine before straightening fabric.

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<sup>9</sup> This is an unreported case. The case details are *Herless Pty Ltd v Barnes* (unreported, Industrial Relations Commission of Victoria in Court Session, Garlick, Case No 12/1986, 26 September, 1986).

<sup>10</sup> This is an unreported case. The case details are *Victorian WorkCover Authority v Chem-Mak Pty Ltd* (unreported, Melbourne County Court, O'Shea, 10 September, 1999).

A different interpretation of the supplier's duty was taken in a New South Wales prosecution in 2001. This prosecution was taken under NSW's former *Occupational Health and Safety Act 1983* which, like OHSA (NSW) 2000, included in the duty of designers, manufacturers and suppliers the qualification of ensuring that plant is safe and without risks to health "when properly used". The relevant case is *WorkCover Authority of New South Wales (Inspector Mulder) v Arbor Products International (Australia) Pty Ltd* [2001] 105 IR 81. The defendant in this case, Arbor Products, had supplied to Yass Shire Council a mobile wood chipping machine. The company was prosecuted (under OHSA NSW: s 18(2)(a)) following an incident in which a worker sustained serious traumatic injuries to both arms after becoming caught in the machine.

The defendant, the supplier of the plant, argued in its defence that the worker had not properly used the machine because safety information provided in a manual supplied with the plant had not been followed. It was also noted that the Council had indicated its intention to use the chipping machine at a waste transfer station and that the defendant had advised the Council that the machine was not appropriate for this use because the material to be processed consisted of more foliage and the machine had a propensity to block up. The supplier had advised the Council that if the machine was to be used at a transfer station "they would have to be particularly diligent in the maintenance and how it is to be operated and fed." (105 IR 81: 94).

The Industrial Relations Commission in full session concluded (on appeal) that too much weight was given to the provision of information in a manual and training to the Council employees (105 IR 81: 99). Moreover:

*"As to the qualification in s 18(2)(a) arising from the phrase "when properly used", we conclude that the qualification is intended to limit liability of a supplier where the plant which is supplied is safe (in the sense that the safety is ensured) but such plant becomes unsafe because of misuse (for example, the wilful misuse of a machine by removal of a guard). It was plainly not the intention of the legislature to allow, by the use of that phrase, a limitation in the obligations arising under the sub-section where the defendant had, for example, provided an instruction manual or advice on how to use the plant supplied or had provided training for employees in the proper use of the plant at work where the plant was unsafe. If this were the case, it would be open to manufacture and supply plant for use at work that was not safe and posed risks to health. A supplier could simply argue on a prosecution under s 18(2)(a) that, notwithstanding the plant supplied was inherently unsafe, an instruction manual was issued on how to properly use the plant and, consequently, no liability arose. In reaching this conclusion we have accepted the appellant's submission that the duty that arises under s 18(2)(a) cannot be intended to have been circumscribed in the way contended for by the respondent and accepted by his Honour at first instance. (105 IR 81: 99).*



Thus the qualification “when properly used” is a confusing and potentially dangerous expression. It can lead to a belief on the part of a designer, manufacturer or other supplier that it is reasonable to rely upon directions about proper use, whether or not these are realistic in the circumstances of work. Readers will also note that the expression “when properly used” is not in the common law (refer to Section 2.3). Retaining “when properly used” in the OHS legislation may well give duty holders a false sense that they can draw on “when properly used” as a defence, which is misleading in view of the direction that legal action may take following the Arbor Products prosecution. Moreover, reliance on “proper use” as a precaution is unlikely to be effective in protecting workers from risks to their safety and health.

A further point of confusion is the fact that the expression “when properly used” has largely been abandoned in OHS regulations (Gunningham et al, 2000: 21). The Commonwealth’s OHS(NS)R and Western Australia’s OHSR are rare examples of its retention. Queensland’s *Plant Advisory Standard* advises consideration of foreseeable misuse of plant. In the other jurisdictions the emphasis is on risk management. Indeed, as Gunningham et al (2000: 38 and 64) emphasise, the use of the expression “when properly used” to qualify upstream duties conflicts with the systematic processes of hazard identification, risk assessment and risk control, applying a hierarchy of control measures.

An approach that provides the necessary qualification of the duties of care is already incorporated in OHS legislation. As discussed in Part One of this report, the Australian OHS statutes all qualify duties by what is “practicable”, “reasonably practicable”, taking “reasonable precautions” or exercising “proper due diligence”, as expressed in the particular statute. As the High Court concluded in *Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR 304, the phrase “reasonably practicable” means something narrower than “physically possible” or “feasible”; what is “reasonably practicable” is to be judged on the basis of what was known at the relevant time; and to determine what is “reasonably practicable” it is necessary to balance the likelihood of the risk occurring against the cost, time and trouble necessary to avert that risk (HCA 6: 322-323). In the case of designer, s/he can only be held responsible for matters which are within the power of the designer to perform or check. A designer cannot be expected to take account of factors outside his/her power to control, supervise or manage (HCA 6: 319).

Thus, the device of “practicability”, already codified in OHS statute law, provides sufficient qualification of the duties of care. There are strong arguments to remove the additional qualification, the expression “when properly used” from the relevant provisions of the OHS statutes, OHS regulations and evidentiary standards in which this expression remains.

### **Progressive Summary – the Problem of “When Properly Used”**

The Australian OHS statutes qualify the upstream duties with the expression “when properly used”, although under OHSWA (SA) (s 24) duty holders are also required to take account of reasonably foreseeable forms of misuse. The expression “when properly used” is confusing and may give the impression that it is sufficient to warn of risks in plant that is inherently unsafe or poses risks to health. This is contrary to common law principles of negligence, which are concerned with “foreseeable risks”.<sup>11</sup>

An approach that provides the necessary qualification of the upstream duties of care is already incorporated in Australian OHS law. This is the qualification of “practicability”<sup>12</sup> which balances the likelihood of the risk occurring against the cost, time and trouble necessary to avert the risk. There is a strong case to remove the expression “when properly used” from the relevant duties and to apply the concept of practicability to determine a reasonable standard of care.

### **3.5 Regulated Risk Management for Plant**

Risk management is the process of hazard identification, risk assessment and risk control. Only one jurisdiction, Queensland, provides for the processes of hazard identification, risk assessment and control within its principal OHS statute. These processes are part of the general arrangements for “ensuring workplace health and safety” (WHS Act (Qld): s 22). In the other jurisdictions risk management provisions can be found in the OHS regulations and approved codes of practice.

The risk management processes in the regulations and evidentiary standards provide a mechanism for complying with the statutory duties relating to safe design and construction of plant. Nonetheless the regulations, codes and advisory standards (Qld) need to be considered in their own right as their provisions are generally not qualified to the same extent as the duties in the OHS statutes. In particular, the regulations are typically less concerned with “proper use”.

The risk management processes for plant presented in OHS regulations or evidentiary standards are generally based on the *National Standard for Plant* (NOHSC, 1994a). Nonetheless, there are important variations in adoption of the national model standard by the jurisdictions. For example, Queensland’s *Plant Advisory Standard* states that designers, manufacturers and importers should undertake risk management (a process

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<sup>11</sup> For a discussion of the common law principles of negligence, refer to Section 2.3 in Part One of this report.

<sup>12</sup> For a discussion of the use of “practicability” and similar qualifying terms in OHS legislation, refer to Section 2.6 in Part One of this report.

spelt out in WHSA (Qld)) to ensure that control measures to prevent or minimise exposure to health and safety risks are in place and suitable for the plant (PAS (Qld): s 1.1, 2.1 and 3.2). Regulations in Tasmania and Northern Territory require risk control in relation to plant design, manufacture, import and supply but do not incorporate processes of hazard identification and risk assessment (WHS Regs (Tas) and WH(OHS) Regs (NT)). All other jurisdictions specify distinct process steps of hazard identification, risk assessment and control.

In general, duty holders have hazard identification and risk assessment responsibilities as follows:

- the designer is initially responsible for hazard identification and risk assessment;
- the manufacturer assumes the designer's duties if the latter is outside the jurisdiction and is also responsible for hazards arising in manufacture of the plant;
- an importer takes on the duties of the designer and manufacturer if they are outside the jurisdiction;
- the supplier has duties to identify hazards and assess risks (in some jurisdictions only).

All jurisdictions have provisions relating to risk control in some form, although in PAS (Qld) they are part of the generic process of risk management and WHS R (Tas) focuses on a limited range of specific risk control measures. In the other jurisdictions the risk control activities of the duty holders can be characterised as follows:

- the designer is responsible for eliminating or minimising risk (sometimes expressed only as minimising or reducing risk);
- the manufacturer assumes the duties of the designer if the latter is outside the jurisdiction and is responsible for eliminating or minimising (or reducing) risks arising in manufacture of the plant; the manufacturer also addresses faults identified after supply of the plant;
- an importer assumes responsibility for risk control if the designer and manufacturer are outside the jurisdiction;
- the supplier eliminates or minimises (or reduces) risks of plant under his/her control and identifies faults to the purchaser/owner after supply.

The jurisdictions take different approaches to the role of the supplier. Some do not specify that suppliers must identify hazards and assess risks. However, these activities are required of suppliers under OHS(P)R (Vic): r 603; and OSHR(WA): r 4.2.6(1) and (2). In regard to risk control, suppliers have duties in all jurisdictions except Queensland where their duty is confined to information provision (PAS (Qld): s 4).

An area of difference between the jurisdictions, with the potential to impact upon safe design, is the detail provided about hazards to be addressed. For example, the *National Standard for Plant* (NOHSC, 1994a) includes a list of different types of hazards to be identified (NSP (NOHSC) 65). The national standard draws attention to some typical plant hazards including entanglement, crushing, trapping, cutting, stabbing, puncturing, shearing, abrasion, tearing and stretching, as well as failure of the plant resulting in loss of contents, loss of load, unintended ejection of work-pieces, explosion, fragmentation or collapse of parts. It also highlights the need to consider the capability of the plant to lift and move people, equipment and materials. Hazard identification is to be undertaken in this manner under OHSWR(SA): r 3.3.1, OHS(CE)(NS)R (Cwlth): r 4.31 and the ACT's approved code of practice.

Other jurisdictions do not specify in regulations the types of hazards that must be addressed. However, the Victorian *Code of Practice - Plant* outlines a list of hazards to be addressed which contains some different hazards as well as some that are the same as the *National Standard for Plant*. In Western Australia the Australian Standard AS 4024.1 *Safeguarding Machinery* (Standards Australia, 1996) is an approved code of practice. This includes technical guidance about hazard identification for plant, comprehensively addressing ergonomic considerations, mechanical and other hazards relevant to plant design and construction. Queensland's *Plant Advisory Standard* also outlines a range of factors for designers and manufacturers to consider. While there are some similarities with the national standard some important hazards are not addressed. However, the Queensland standard does focus attention on minimising manual handling risks in the design of plant, which are not specifically addressed in the NOHSC standard. Moreover, PAS (Qld) advises duty holders to consider a range of relevant technical standards, including AS 4024 *Safeguarding of Machinery*, which do provide detailed guidance about mechanical and other hazards. A further advantage of the Queensland advisory standard is its comprehensive identification of the life cycle phases of plant to be considered in risk management (PAS (Qld): s 1.2).

All jurisdictions address risk control for plant but the approaches vary. South Australia, the ACT, the Commonwealth apply the approach of the *National Standard for Plant* which:

- requires risk control to be addressed for life cycle phase of manufacture, installation, erection, use, maintenance, adjustment, repair and cleaning;
- invokes the hierarchy of control; that is, substitution, modification of design, isolation, engineering controls, administrative measures and personal protective equipment;
- addresses some specific aspects of risk control including ergonomic design, rollover and falling objects protection, discharge of unwanted substances, access and egress, emergency lighting and alarms, guarding, procedures for clearing jams, operational controls, emergency stops and warning devices;
- specification of operator competencies;
- technical standards are identified against which specified items of plant are to be designed and registered. (These are discussed further below in Section 3.8).

A somewhat different approach is taken in other jurisdictions. In some this involves an approved code of practice or advisory standard. The approaches are as follows:

- Western Australia adopts in its regulations essentially the same elements of risk control as the *National Standard for Plant* and provides further guidance through the adoption of AS 4024.1 *Safeguarding of Machinery*, as an approved code of practice.
- New South Wales' OHS regulations cover some aspects of the risk controls in the *National Standard for Plant*. There is a *Technical Guidance 2001* (WorkCover Authority NSW, 2001a), which has the status of an approved code of practice. This identifies that a number of Australian Standards that are relevant to plant are incorporated into this code of practice. Some of these are more up to date than the standards referred to in regulations or codes of other jurisdictions.

- Victoria's plant regulations cover some of the specific risk controls addressed in the *National Standard for Plant* and there is guidance in the plant code of practice which also lists a number of technical standards that "designers may choose to consider" (COP(P)(Vic): cl 13.3). There is no requirement to meet particular technical standards, but there is a requirement to record any published technical standards and engineering principles that are applied (OHSR (Vic): r 307).
- In Queensland, in the course of risk management, designers and manufacturers are advised to consider a wide range of factors (PAS (Qld): part 1). A more comprehensive life cycle approach is taken (PAS (Qld):s 1.2) and a variant of the hierarchy of control measures is advised as the preferred approach to control. This includes design, substitution, redesign, separation (isolation), administrative controls and personal protection (PAS (Qld):s 12.4). Engineering controls are not specified although these are presumably considered under design and redesign measures. Designers are encouraged to apply any relevant published standard and a non-exhaustive list of some relevant ones is provided (PAS (Qld): Appendix 2).
- Regulations in Tasmania focus on a limited set of specific risk control measures (WHSR (Tas): part 4, div 3.1).
- The Northern Territory regulations require risks to be minimised in design and some specify some technical standards to be met for registrable items of high risk plant.

Thus, the principal responsibility for risk management generally rests with designers and manufacturers of plant, with importers assuming a role if the designer or manufacturer is outside the jurisdiction. In most jurisdictions the role of the supplier is to ensure the designer and manufacturer have met their responsibilities, although suppliers are generally still expected to eliminate or minimise risks for plant under their control.

While all jurisdictions broadly adopt a risk management approach, the expectations vary in regard to how to carry out hazard identification, risk assessment and control. On the one hand the variation is a potential source of confusion or hard work for a duty holder attempting to reconcile the differences between jurisdictions. On the other hand these are essentially variations in processes which in themselves don't tell duty holders a great deal about how to address substantive risks in the design and the construction of plant.

The technical standards referenced in OHS regulations, approved as codes of practice or referenced in evidentiary standards are an important source of more specific advice about safe design and construction. (Their use in the legislative framework is discussed further in Section 3.8). Documents such as Australian Standards provide a source of advice that is consistent nationally, although whether they have specific legal status varies from jurisdiction to jurisdiction. Greater consistency in the range of hazards to be addressed could be of assistance to upstream parties, especially to draw attention to hazards outside of the more readily recognised mechanical hazards of machinery and equipment.

### 3.6 Testing and Examination of Plant

The Australian OHS statutes require the testing and examination of plant, by at least some of the upstream parties, in all jurisdictions except New South Wales and Tasmania. In general, the duty holders are not expected to undertake the testing and examination themselves. They can ensure it is done or arrange for it to be done. Indeed under OHS(CE)A (Cwlth): s 22(3) and OHSA (ACT): s (35(2) a person with such a duty may rely upon research, testing or examination of plant carried out by or on behalf of others, if it is reasonable to do so. Those most commonly assigned duties of this type under the OHS statutes are manufacturers and importers (all jurisdictions except NSW and Tasmania). Nonetheless, designers have such duties in five jurisdictions, and suppliers have such duties in six jurisdictions<sup>13</sup>. The testing and examination needs to be sufficient to ensure that the duty to design and construct safe plant (Qld, Vic, SA, WA, NT) or discover, eliminate or minimise risks (ACT, Cwlth), is complied with. Where testing is required of duty holders, it is expressed in the same manner for all such duty holders within the jurisdiction.

Duties to test and examine are also established in regulations relating to plant that are made under the OHS statutes. Some jurisdictions also have evidentiary codes of practice or advisory standards which describe duties to test. The duties in sub-ordinate legislation are more limited in scope and application than under the OHS statutes. Two jurisdictions do not include regulations for testing and examination of plant. Of the jurisdictions that do cover testing and examination, only Queensland's *Plant Advisory Standard* (PAS (Qld): s 1.11) identifies a role for designers. The other six jurisdictions focus primarily on the role of manufacturers and importers and link testing with compliance with the scheduled technical standards for registrable plant and/or the designer's specifications. Queensland's advisory standard is also the most expansive in regard to the role of manufacturer's, referring to a range of tests to be considered (PAS (Qld): s 2.3). However, importers in Queensland are advised to check the designer and manufacturer's documentation of testing rather than undertaking it themselves. Compared with their duties under the OHS statutes, suppliers have a minor role in testing under the regulations. It is limited to suppliers who hire or lease being required to carry out any testing needed, in a few jurisdictions.

Although the provisions relating to testing and examination of plant are limited it should be noted that there are various technical standards relevant to upstream duty holders. Some of these standards identify testing and examination requirements. In jurisdictions where a technical standard is adopted by reference in regulations or given evidentiary status, relevant duty holders will need to conduct the testing and examination identified in the technical standard. There is further discussion of the technical design standards below.

Thus, duty holders from designers through to suppliers may have responsibilities to test and examine plant. This duty is broader in the OHS statutes than in the regulations, which tend to focus on the role of manufacturers and importers. It is likely that duty holders would need to draw on technical standards and/or engineering principles

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<sup>13</sup> The reason why more jurisdictions give suppliers duties to test than designers is not because this is more a duty for suppliers. Rather, the Commonwealth jurisdictions and the ACT do not specify duties for designers of plant at all. Their duties start with the manufacturer.

relevant to the type of plant in order to identify appropriate testing and examination for the plant that they design, make, import or supply.

### 3.7 Provision of Information About Plant

Information provision is part of the duties of designers, manufacturers, importers and suppliers under the OHS statutes. The duty is to ensure that information is provided. These parties are not obliged to produce the information themselves. Although there is a common connection with supply of the plant (NSW, SA, WA, Tas, NT), some jurisdictions require that information is to be "available" (Qld), "available in connection with use" (Vic, ACT, Cwlth) and "when requested" (WA). Within a jurisdiction the upstream parties generally have the same duty in regard to supplying information, although in the ACT and the Commonwealth the information items are different for manufacturers/importers from what they are for suppliers.

There is considerable variation between the jurisdictions' regarding the nature of information to be provided. Items include:

- the use for which the plant has been designed and tested; (Qld, Vic and manufacturers only in ACT and Cwlth);
- details of design and construction (manufacturers only in Cwlth);
- dangers of the plant (WA, NT, Tas);
- the condition of plant at the time of supply, risks arising and steps to eliminate them (suppliers only in ACT and Cwlth);
- safe use (Qld, NSW, Vic, SA, WA, Tas, NT, ACT, Cwlth);
- proper maintenance (WA, ACT);
- data on testing undertaken (WA, NT).

There are also information provision requirements in the OHS regulations relevant to plant, and/or in evidentiary standards. These are generally derived from the *National Standard for Plant* (NOHSC, 1994a). Nonetheless, there are variations between the jurisdictions. An important feature of these provisions is the differentiation between the roles of different duty holders. Thus designers provide certain information to manufacturers, who in turn provide this information to suppliers, together with any additional items the manufacturer is responsible for (for example, results of testing of the plant). Importers take on the role of the designer/manufacture if the latter are outside the jurisdiction. Suppliers provide the designer/manufacture's information to purchasers and owners of the plant.

Information provision reflecting the *National Standard for Plant* is required in OHSR (NSW), OHSWR (SA), OSHR (WA), WH(OHS)R (NT) and the NSP ACOP (ACT). The approach in Victoria is similar although there the designer has primary responsibility for generating information while the manufacturer and importer obtain this information "so far as is practicable" (OHS(P)R(Vic):r 308, 405 and 503). The OHS(CE)(NS) Regs (Cwlth) identify the primary role of the manufacturer/importer to make information available to the employer (rather than owner/purchaser). Queensland's *Plant Advisory Standard* treats designers, manufacturers, importers and suppliers equally in identifying the same range of information to be provided. The list of items to be included is more extensive than in the state/territory regulations based on the *National Standard for Plant* (see below).

The above arrangements focus on new items of plant. The duties of suppliers of used plant are generally confined to passing on the designer/manufacture's information "as available" and records kept by the previous owner (NSW, Vic, SA, WA, NT, ACT). However, regulations in NSW, WA and NT also require the supplier to provide any additional, available health and safety information that is required (OHSR (NSW): r 122 and 123; OSHR (WA): r 4.33(3); WHR(OHS)R (NT): r 86(3) and (4)).

Compared with the OHS statutes there is greater consistency in the scope of information to be provided under OHS regulations, again reflecting the adoption of elements of the *National Standard for Plant* (NOHSC, 1994a). Thus core information items are:

- purpose for which the plant is designed (Qld, NSW, Vic, SA, WA, NT, ACT);
- testing and inspections to be carried out on the plant (Qld, NSW, Vic, SA, WA, NT, ACT);
- information about installation, commissioning, operation, maintenance, cleaning, transport, storage and dismantling (Qld, NSW, Vic, SA, WA, NT, ACT);
- systems of work for safe use of the plant (NSW, Vic, SA, WA, NT, ACT, Cwlth);
- knowledge, training or skill necessary for those inspecting and testing the plant (NSW, Vic, SA, WA, NT, ACT, Cwlth);
- emergency procedures (NSW, Vic, SA, WA, NT, ACT, Cwlth).

Queensland's *Plant Advisory Standard* (PAS (Qld): ss 1.12, 2.4, 3.4 and 4.2) takes a different approach, omitting some of the items listed above and adding some. Additions include, information about ways the plant should not be used and specific prohibitions, the results of tests on the plant, residual risks and methods of control, special tools for maintenance, and instructions to the manufacturer about materials, manufacturing process, fitting of parts and specific hazards in manufacture.

Thus, designers and manufacturers have a primary role to generate and provide health and safety information for plant. Those importing plant (either into the country or into a particular jurisdiction) will often be expected to take on this responsibility. Due to variation in the items of information (both under the OHS statutes and sub-ordinate legislation) those generating information for plant that is likely to be supplied in more than one jurisdiction would need to cover the range of items across the jurisdictions.

Even taking such an aggregate approach, those responsible for generating information are provided with little direction or guidance. This is in striking contrast to the guidance provided to the manufacturers and importers of hazardous substances. The *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC: 2011, 1994b) provides detailed description of the items to be included in information supplied with hazardous substances. Those responsible for generating information in relation to plant, and the end users of this plant, could benefit from similar guidance about information provision. Ideally this would cover scope and content as well as format and style to enhance the readability and application of this information.



### 3.8 Technical Standards for Design, Design Verification and Registration of High Risk Plant

A cornerstone of the *National Standard for Plant* (NOHSC, 1994a) was the establishment of consistent standards for, and verification and registration of the design of specific items of high risk plant. Various types of cranes, pressure equipment, gas cylinders, lifts, building maintenance units, work boxes, elevating work platforms, prefabricated scaffolding, hoists, mast climbing work platforms and amusement structures were to be designed in accordance with specified technical standards relevant to these items. The system envisaged by the *National Standard for Plant* requires independent verification that the design meets the designated technical standard. "Independent" means that the design verifier must not have any involvement in the design of the relevant plant, and the designer and the design verifier must not be employed or engaged by the same person unless a quality system is used to undertake the design and that system is certified by a body accredited or approved by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) (NOHSC, 1994a, cl 69 and 70).

It was envisaged that each jurisdiction would adopt consistent regulations to give effect to the national standard enabling the mutual recognition of designs registered in any Australian jurisdiction. Six jurisdictions (NSW, SA, ACT, WA, NT, Cwlth) have introduced regulations (or an approved code of practice in the ACT) giving effect to the arrangements envisaged by the *National Standard for Plant*. These jurisdictions have introduced a system of design verification and registration for the specified high risk items of plant, with reference to specific Australian Standards. However, it is noted that as new standards have become available since 1994, it is now timely to reconsider the design standards referenced in OHS legislation. The New South Wales regulations are the most current and include the most recently published editions of the relevant standards for the scheduled items of plant (OHSR (NSW): schedule 1).

Three jurisdictions (Queensland, Victoria and Tasmania) have introduced variants of the system envisaged by the *National Standard for Plant*, as outlined below:

- Queensland requires design verification by a person who is "competent" on the basis of training, qualification or experience. The design verifier is not required to be independent of the designer. The design must comply with specified technical standards. While some of the plant requiring verification and registration is the same as in the *National Standard for Plant*, there are differences in the types of plant covered and fewer design standards are scheduled.
- Victoria requires design verification and registration for all of the same items of plant (except gas cylinders) as set out in the *National Standard for Plant*. The design verification is to be done by a person who did not participate in the design (OHSR (Vic) 1003) but there is no requirement for a certified quality system if the design verifier is employed or engaged by the same person as the designer. Particular technical standards that the design must meet are not specified. Rather, the designer is to record the published technical standards or engineering principles applied in the design (OHSR (Vic) 307).

- Tasmania requires design verification by a design verifier who is competent and independent of the designer. "Independent" is not defined and there is no mention made of a certified qualified system. The WHSR (Tas) establish that the person registering the design may be required to supply detailed drawings of the plant design; design calculations; details of operating instructions and any limitations; diagrams of control systems, including the sequence for operating the controls;
- details of maintenance requirements; and inspection requirements and frequency of inspection.

Thus, only some jurisdictions require independence of the designer and design verifier for high risk items of plant, including a certified quality system if the designer and verifier are engaged by the same person. There are also differences in the technical design standards recognised for the registration of designs. In the context of mutual recognition legislation, a jurisdiction that permits an item of plant to be manufactured in or imported into its jurisdiction, makes that plant marketable in all jurisdictions. This requires a uniform approach to the regulation of high risk items of plant. As advocated by Lynch and Russell (1998), a consistent approach requires that all jurisdictions agree to functional independence for design verification; and develop and adopt a list of design standards that are acceptable in all jurisdictions. These may be Australian or overseas standards. The discussion in Section 4 of this report, of the European Union's system for regulation of machinery, identifies the technical standards used in Europe. These are also listed in Appendix 2 for reference.

### **3.9 Enforcement of Plant Regulation Provisions**

Enforcement policy and legislative provisions relating to the enforcement of OHS legislation apply to all designed-products. They are therefore dealt with in Part Six of this report 'Strategic Enforcement of Safe Design'.

### **Progressive Summary - Systematic Processes for Safe Design of Plant and Sources of Variation in Australian OHS Law**

The ten Australian OHS statutes, associated regulations and evidentiary standards establish a regulatory framework for safe design of plant which varies across the ten jurisdictions. For upstream parties who operate across jurisdictional borders, this range of instruments is a significant challenge. Taking a broad brush, these instruments incorporate some common processes for addressing risks to safety and health in the design and construction of plant. These common elements are:

- a process of risk management that requires responsible parties to identify hazards, assess and control risks;
- a requirement to test and examine plant;
- a requirement to provide information;
- adoption of technical standards as a benchmark for safe design and construction;
- a requirement for verification of design for some types of plant that are designated as high risk.

However, looked at more closely there are many sources of variation within these core elements. For example there is variation between jurisdictions in: (1) the range of hazards to be identified; (2) the range of life cycle phases of plant for which risks are to be addressed; (3) the methods for risk control; (4) the technical standards that are applied, and whether they have mandatory or evidentiary status; (5) whether and, if so how, plant is tested; (6) the types of plant that require design verification and the criteria for selecting a design verifier; and (7) what information is provided, by whom and to whom.

The variable regime for the regulation of plant safety under OHS legislation is a system designed as if plant is produced, supplied and used within the borders of one state, territory or Commonwealth jurisdiction. However, plant moves between jurisdictions within Australia, as well as into and out of this country. If regulation is to encourage and enable safe design of plant, clarity about what is required is an essential characteristic.

In Part Five of this report there is further discussion of possible future directions for regulation of safe design. In considering possible future directions it is pertinent to consider whether there are features or elements of other regulatory regimes which complement or would be beneficial to include in the regulation of safe design of plant under the OHS statutes. The following sections of Part Two contain information about alternative regimes.

## 4. The Regulation of Machinery Safety in Europe<sup>14</sup>

### 4.1 Legal Instruments

The principal instrument from which the regulation of machinery safety is derived in Europe is the *Machinery Directive*, that is, “Directive 98/37/EC<sup>15</sup> of the European Parliament and of the Council of 22 June 1998 on the approximation of laws of the member states relating to machinery” (European Commission, 1998a). The 1998 *Machinery Directive* is a consolidation of the original machinery directive (89/392/EEC) and directives amending this (91/368/EEC, 93/44/EEC and 93/68/EEC). An example of member state legislation implementing the Directive is in the UK, *The Supply of Machinery (Safety) Regulations 1992* (as amended in 1994).

There are additional directives for specific machinery including simple pressure vessels (87/404/EEC), other pressure equipment (97/23/EC), lifts (95/16/EC), and agricultural and forestry tractors (74/150/EEC and 88/297/EEC). These items are not covered by the *Machinery Directive* unless incorporated into other machinery covered by the Directive. There are also directives for specific hazards (electromagnetic radiation and noise) which must be complied with for all machinery with which these hazards may arise, in conjunction with the *Machinery Directive*. (For details of these Directives see references European Commission 1973, 1974, 1979, 1986, 1987, 1989a, 1995, 1997). This review focuses on the *Machinery Directive* as these are the generic requirements relating to machinery safety and apply to a wide range of machinery.

### 4.2 Rationale for the Machinery Directive and Administration

The purpose of the *Machinery Directive* is to facilitate free movement of machinery and improve the safety of hazardous items by harmonising the laws of member states in relation to machinery safety. In the context of the principle of freedom of movement operating in the European Union, prohibitions or restrictions on imports, exports or goods in transit are only permitted on specific grounds. The *Machinery Directive* establishes “essential health and safety requirements” which may justify prohibitions or restrictions to a machine being placed on the market if it does not comply with any of the essential requirements. If machinery complies with the Directive free movement may not be prevented or restricted (see Article 4 of the Directive).

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<sup>14</sup> The information about the European *Machinery Directive* presented in Section 4 of this report is summarised from the following sources:

- European Commission (1998a) “Council directive 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of laws of the member states relating to machinery”, *Official Journal L* 207, 23/07/1998: 1-46.
- European Commission (1998b) *Community Legislation on Machinery. Comments on Directive 98/37/EC*, Office for Official Publications of the European Communities, Brussels.
- European Commission (1998c) *Useful Facts in Relation to the Machinery Directive*, Office for Official Publications of the European Communities, Brussels.

<sup>15</sup> The European Commission is reviewing the *Machinery Directive* but it appears any amendment is unlikely to take effect before 2005 (Department of Trade and Industry, 2001; Health and Safety Commission, 2001). Amendments under consideration are intended to clarify scope, interpretation and implementation of particular provisions of the Directive rather than making more fundamental changes.

The Directive is administered by the European Commission in conjunction with member states. There is an advisory committee established to advise the Commission on any difficulties with any essential requirement. An example of member state administration is the UK. In that country responsibility for policy matters in relation to *The Supply of Machinery (Safety) Regulations* rests with the Department of Trade and Industry. Enforcement is the responsibility of the Health and Safety Executive, for machinery supplied for use at work, and the local authority Trading Standards Officers, for machinery supplied for private use.

### 4.3 Scope and Application

The Directive applies to the initial “placing on the market” or “putting into service” of machinery and safety components, in the European Economic Area (EEA). The EEA is comprised of member states of the European Union and nations that are signatories to the agreement on the EEA.

The Directive applies to “machinery”, which is defined in Article 1(2) of the Directive to cover machinery in general (except for specific exclusions) but not components of machinery (except safety components). Machinery may be for occupational or for non-occupational use. The Directive also applies to “safety components” which are components that have a safety function as a specific characteristic of the component, for example electro-sensitive devices to detect persons, roll over protective structures, power-operated guards, emergency stopping devices. Failure or malfunction of a safety component is critical as it endangers the health and safety of exposed person.

The specific exclusions from the *Machinery Directive* are machinery that is powered by manual effort (except if the manual effort is stored in springs, hydraulic or pneumatic accumulators which can produce dangerous action); machinery for medical use; equipment for use in fairgrounds and/or amusement parks; steam boilers, tanks and pressure vessels; machinery for nuclear purposes; radioactive sources forming part of a machine; firearms; storage tanks and pipelines for petrol, diesel fuel, inflammable liquids and dangerous substances; means of transport, intended solely for transporting passengers or goods by air, road, rail, water (except vehicles used in mineral extraction); mobile offshore units; cableways, including funicular railways; agricultural and forestry tractors; machines specially designed and constructed for military or police purposes; lifts which permanently serve buildings and structures; rack and pinion rail mounted vehicles; mine winding gear; theatre elevators; construction site hoists for lifting persons or goods (Article 1(3)).

In addition, where the risks of equipment are mainly electrical, the machinery is covered exclusively by the *Electrical Equipment Directive*, that is, “Directive 73/23/EEC on the harmonization of the laws of member states relating to electrical equipment designed for use within certain voltage limits” (European Commission, 1973).

## 4.4 Responsibility

Responsibility rests with the person who puts the machinery onto the market or into service in the EEA (Article 2). This is usually the manufacturer of the machinery or safety components, whether located inside or outside the EEA. They must comply with the Directive before they first place their product on the market in the EEA, and in the case of machinery which is installed on site, before that machinery is put into service. Machinery built by a user (for their own use) is also put into service in the EEA and the Directive applies.

The manufacturer (or authorised representative) takes overall responsibility for design and ensuring that the suppliers of any components of the machinery are advised of the relevant essential health and safety requirements. The manufacturer may appoint an “authorised representative” to act on his/her behalf in the EEA. A manufacturer outside the EEA is not obliged to appoint an authorised representative but if s/he does so the representative must be resident in the EEA.

A distributor who sells machinery under his/her brand name is the “apparent manufacturer” and takes on the obligations of the manufacturer.

## 4.5 Risk Management and Essential Health and Safety Requirements

The fundamental approach of the *Machinery Directive* is integration of safety at the design stage. Safety must be integrated into the machine as used for production purposes, as well as for machinery adjustment, maintenance, assembly and dismantling. The Directive lays down “essential health and safety requirements” (presented in Annex I of the Directive). These include some performance-outcome provisions in that they identify the health and safety outcomes required but do not specify how these are to be achieved (refer to Section 2.5 for an explanation of types of provisions). Table 5 presents some examples of performance-outcome provisions from the *Machinery Directive*. Appendix 3 presents the complete set of essential health and safety requirements requirements as published in the UK *Design of Machinery (Safety) Regulations 1994* (they are the same as the *Machinery Directive*).

The essential health and safety requirements presented in Annex I of the *Machinery Directive* comprise general requirements that apply to all machinery as well as specific requirements for particular machinery. The general requirements address a range of safety matters including materials and substances; lighting; control systems and devices; emergency and normal stopping; power supply and starting; stability; falling or ejected objects; surfaces and edges; tools; type of guarding and access for installation, maintenance and clearing blockages; electrical hazards and static electricity; hydraulic, pneumatic and other energy sources; extreme temperatures; fire and explosion; vibration; radiation; lasers; emissions; trapping and enclosure; slipping, tripping and falling; access to operating position; isolation and dissipation of energy sources; cleaning and unblocking; maintenance and operator intervention; warning devices; warning of residual risks (pictograms).

**Table 5: Some Examples of Performance-Outcome Provisions in the *Machinery Directive* (see also Appendix 3 for all of the “essential health and safety requirements”)**

Control devices must be designed or protected so that the desired effect, where a risk is involved, cannot occur without an intentional operation. [clause 1.2.2, para 1, point 6]
From the main control position the operator must be able to ensure that there are no exposed persons in the <i>danger zones</i> . [clause 1.2.2, para 5]
Precautions must be taken to prevent risks from <i>falling or ejected objects</i> (for example workpieces, tools, cuttings, fragments, waste etc). [clause 1.3.3]
Type B movable guards must be designed and incorporated into the control system so that: <i>moving parts</i> cannot start up while they are within the operator’s reach; the exposed person cannot reach moving parts once they have started up; they can be adjusted only by means of an intentional action, such as the use of a tool, key etc; the absence or failure of one of their components prevents starting or stops the moving parts; protection against any risk of ejection is provided by means of an appropriate barrier. [1.4.2.2, para B]
Machinery must be so designed and constructed as to prevent or limit the build-up of potentially dangerous <i>electrostatic charges</i> and/or be fitted with a discharging system. [clause 1.5.2]
Machinery must be so designed, constructed and/or equipped that risks due to <i>gases, liquids, dust, vapours</i> and other waste materials, which it produces, can be avoided. [clause 1.5.13]
Machinery must be designed, constructed or fitted with a means of preventing an exposed person from being <i>enclosed within</i> it or, if that is impossible, with a means of summoning help. [clause 1.5.14]
If intended by the manufacturer to be used in dark places, self-propelled machinery must be fitted with a <i>lighting</i> device appropriate to the work carried out, without prejudice to any other regulations applicable (road traffic regulations, navigation rules, etc). [clause 3.1.2]
Handholds and steps must be designed, constructed and arranged in such a way that the operators use them instinctively and do not use the controls for that purpose. [clause 3.4.5]

The requirements relating to specific machinery apply to agri-foodstuffs machinery; portable hand-held and/or hand-guided machinery; wood working and analogous machinery; machinery presenting hazards due to mobility; mobility presenting hazards due to lifting; machinery for underground work; machinery for lifting or moving people.

The essential health and safety requirements are applied in the context of a risk management approach. The manufacturer (or authorised representative) must assess each of the essential requirements to identify those which apply to the machine; and then design and construct the machine taking account of this assessment.

In selecting the most appropriate methods to control risks, the manufacturer must apply the following principles, in the order given:

- eliminate or reduce risks as far as possible so the machinery is designed and constructed to be inherently safe;
- take the necessary protection measures in relation to risks that cannot be eliminated;
- inform users of the residual risks due to any shortcomings of the protection measures adopted;
- indicate whether any particular training is required and specify any need to provide personal protection equipment.

#### **Normal use and uses that could be reasonably expected**

When designing and constructing machinery, and when drafting the instructions, the manufacturer must envisage not only the normal use of the machinery but also uses which could reasonably be expected. The machinery must be designed to prevent abnormal use if this would engender a risk. In other cases the instructions (see further below) must draw the user's attention to ways - which experience has shown might occur - in which the machinery should not be used.

Under the intended conditions of use, the discomfort, fatigue and psychological stress faced by the operator must be reduced to the minimum possible taking ergonomic principles into account. Constraints due to use of personal protective equipment must be taken into account.

A manufacturer may choose to comply with the relevant harmonised standard(s) in lieu of corresponding essential health and safety requirements. (See also Section 4.11 'Evidentiary Standards' below).



### **Progressive Summary – Safe Design and Construction of Machinery in the European Union**

In the European Union, the *Machinery Directive* sets the framework for the law of member states in relation to safe design and construction of machinery as well as critical safety components of machinery. Responsibility for safe design and construction rests with the party that places the machinery (and component) on the market in the European Economic Area, or puts it into service. In general this is the manufacturer. Machinery is broadly defined and includes some manually powered items if the manual effort is stored (for example in springs or hydraulic accumulators) that can produce a dangerous action.

There is a requirement to address health and safety in the design and construction of machinery (and safety components), taking into account end use and operation as well as adjustment, maintenance, assembly and dismantling. A generic risk management process is applied but is underpinned by comprehensive, essential health and safety requirements, each of which must be addressed if relevant to a particular machine. A hierarchy of control measures emphasises eliminating or reducing risks when the machine is designed and constructed, so that it is inherently safe. This is supplemented by taking additional precautions where necessary in relation to risks that cannot be eliminated. Information is required about residual risks, to identify the limitations of protection measures and to advise on training required for those using, maintaining etc.

When designing and constructing machinery, and when drafting the instructions, the manufacturer must envisage both normal use as well as uses which could reasonably be expected. The machinery must be designed to prevent abnormal use if this would engender a risk. In other cases the instructions must draw the user's attention to ways in which the machinery should not be used.

## **4.6 Third-Party Assessment and Self-Assessment**

### **4.6.1 Specified types of machinery and safety components (Annex IV)**

Some types of machinery and safety components are listed in Annex IV to the Directive. This is a set list (not variable by member states) and includes some types of machinery within the following categories of machinery: saws, spindle moulding machines, presses, injection moulding machines, machinery for underground work, vehicles servicing lifts, devices for lifting people and machines for manufacture of pyrotechnics. Specific safety components include electro-sensitive devices, logic functions for bimanual controls, automatic screens to protect presses, ROPS and FOPS.

Machinery and safety components listed in Annex IV must go through one of the following processes.

#### **Items listed in Annex IV which conform to harmonised standards**

Where the machinery or safety component complies completely with harmonised standards covering all the relevant essential safety requirements, the manufacturer may declare that the machinery conforms to the *Machinery Directive*. In this case, the manufacturer must send a “notified body” a copy of the technical construction file (see Section 4.7 ‘Documentation - the Technical Construction File’ below) indicating one of the following options:

- (1) the notified body acknowledges receipt of the technical file for the machinery and does not examine it; or
- (2) the notified body verifies the technical file for the machinery and certifies, after examining the file that the harmonised standards have been complied with. A certificate of adequacy is drawn up for machinery; or
- (3) the notified body carries out an EC type-examination for the machinery listed.

#### **Items listed in Annex IV which do not conform to harmonised standards**

For Annex IV machinery or safety components that do not comply with harmonised standards (or there are not relevant standards) the manufacturer (or authorised representative) in the EEA must submit an example of the machinery for “EC type-examination” by a notified body. The notified body examines the machinery and the technical construction file (see section 4.7 ‘Documentation - the Technical Construction File’ below), and if satisfied issues an EC type-examination certificate. If not satisfied the notified body may refuse to issue a certificate.

A notified body is a third party which is competent to carry out conformity assessment tasks. Notified bodies are designated by member states from amongst the bodies under their jurisdiction which meet specified criteria of independence and competence. These designated bodies must be notified to the European Commission. The criteria for selecting notified bodies include accreditation to one or more of the EN 45000 series of European Standards (or demonstrated equivalence). This series of standards specify general criteria for the competence of bodies performing inspection and third party assessment. Notified bodies must be independent in that they must not be the designer, manufacturer, importer, supplier, installer or authorised representative for this machinery. Notified bodies must also have a thorough technical understanding of the machinery they are appointed to assess and the relevant essential requirements and harmonised standards for that equipment (Department of Trade and Industry, 1999: 4 and 11).

#### **4.6.2 Other types of machinery and safety components (not listed in Annex IV)**

Manufacturers of machinery and safety components not listed in Annex IV undertake a "self-certification procedure". The manufacturer self-assesses the machinery or safety component and records the means used to conform to essential requirements in a technical file and make that file available promptly in response to any reasoned request

by a member state. The manufacturer is responsible for making the EC declaration of conformity (see Section 4.8 below).

#### **4.7 Documentation - the Technical Construction File**

The manufacturer maintains a “technical construction file” including information on the manufacturer’s risk analysis and design process. The measures taken to address each of the essential health and safety requirements relevant to the machinery or safety component must be documented in the technical file. This file must be presented in response to a substantiated request from the competent national authority of a member state but can remain on the premises of the manufacturer, even if overseas.

The content of the file is specified in Annex V to the Directive. It includes detailed drawings and calculations, tests and other measures to check conformity with essential health and safety requirements, a list of the essential requirements addressed and standards used in design, the methods used to eliminate hazards, any technical reports from competent bodies, instructions, the measures used to ensure conformity for machinery manufactured in series (ie multiple items). The technical file must be retained for ten years from the date the last unit is produced.

#### **4.8 Declaration of Conformity and CE mark**

The manufacturer is responsible for making the EC “declaration of conformity” and affixing the CE mark to the machinery. The contents of the declaration of conformity are specified in the Directive. Each machine must bear CE marking and be accompanied by an EC declaration of conformity. The CE mark consists of the letters “CE” in a designated form.

Safety components are not marked but do have an EC declaration of conformity. It is always the manufacturer who must follow the procedure, whether or not s/he is established in the EEA, s/he can delegate his administrative obligations to an authorised representative, the only requirement being that the representative must be established in the EEA.

It should be emphasised that the CE mark is not a guarantee of compliance with the essential health and safety requirements. In many cases manufacturers will be carrying out self-assessment. As the UK Health and Safety executive warns, "By affixing CE marking to machinery, the manufacturer is claiming that all relevant legal requirements have been met" (Health and Safety Executive, 1998: para 15). It still remains for the HSE as the enforcer or the purchaser to check this compliance. They may request access to the technical construction file to assist in assessing this.

#### **4.9 Information Provision**

The essential requirements establish that instructions must accompany each machine and include foreseen use, safe installation, putting into service, use, handling, assembly, dismantling, adjustment; maintenance, noise emission level, requirements to reduce noise and vibration, training, and ways the machinery should not be used.

Information must be provided in one of the EEC languages as well as the language of the country where the machinery will be used.

While manufacturers are responsible for provision of information, in practice, in order to do this they will need information from those who supply to them. Thus manufacturers are advised to specify information requirements in contracts for supply to them of component parts or sub-assemblies by others, in order for the manufacturer to undertake risk assessment on the machinery, prepare the technical file (see documentation below) and prepare the instruction manual. While suppliers of subassemblies and ordinary components are not obliged to provide information under the Machinery Directive they have obligations to provide information arising from European contract law (European Commission, 1998b: 42).

#### **4.10 Qualification of Obligations**

The manufacturer's obligations to design and manufacture inherently safe machinery extend to "intended use" and "foreseeable abnormal uses". The manufacturer is expected to address these in the risk assessment. Abnormal use might include the likelihood that an operator will disable safety devices installed in a manner that hinders the operator or reduces production substantially.

The manufacturer must specify the intended uses of the machinery clearly in the information instructions, including assembly and dismantling. They should also indicate ways in which the machinery should not be used. However, it is not sufficient to warn the end user of risks if devices exist which could be reasonably integrated into the machine and which would automatically limit or eliminate the risks in question (European Commission 1998b: 90).

#### **4.11 Evidentiary Standards**

A manufacturer must comply with the essential health and safety requirements, as outlined above. However, they may choose to do this by complying with relevant "harmonised standards". Harmonised standards are technical standards drawn up by the European standards bodies on the basis of a general specification agreed between these organisations and the European Commission. References to these standards are published in the Official Journal of the European Communities. Harmonised standards are taken over unchanged in the member states' national collections. Harmonised standards are drafted for the design of new products and are not applied to products in use in industry prior to the standard. The standards bodies are the European Committee for Standardisation (CEN) and the European Committee for Electrotechnical Standardisation (CENELEC).

If machinery complies with harmonised standards there is a "presumption of conformity" with the Directive's essential health and safety requirements that correspond to the standards complied with. However, a manufacturer is not required to apply harmonised standards. A standard may simply be used as an indication of the target safety level or the manufacturer may refer to other sources. Where a manufacturer does not comply with relevant harmonised standards s/he will have to

demonstrate how the essential health and safety requirements in the Directive have been met by other means.

The presumption of conformity arises from the principle of the general presumption of a citizen's innocence. This legal presumption of conformity under ordinary law applies to all machinery bearing CE marking and accompanied by a declaration of conformity. It is up to the party contesting the conformity of machinery (inspection bodies or users) to provide evidence that machinery does not comply. This legal rule applies even if machinery does not comply with harmonised standards.

There are more than 400 harmonised standards relevant to machinery safety. A list of the harmonised standards relevant to the *Machinery Directive* is presented in Appendix Two. The harmonised standards are of three types: A, B and C. This terminology is specific to the standards drafted under the machinery Directive. The standards are as follows:

- **A standards** deal with basic concepts for design of all machinery - standard EN 292 is an example of this category or EN 614 on ergonomic design principles for machinery;
- **B1 standards** deal with safety aspects concerning a range of machinery such as EN 294 on safety distances to prevent access to danger zones or EN 626 on hazardous substances emitted by machinery;
- **B2 standards** deal with components or devices used on a wide variety of machinery such as EN 281 on the design of pedals or EN 418 on emergency stop equipment;
- **C standards** are "vertical" standards covering a single type of machinery such as EN 415 on packaging machines or EN 746 on thermo processing equipment.

A manufacturer who chooses to comply with relevant harmonised standards would identify the relevant ones for his/her particular type of machinery (type C) and/or any others relevant to specific safety aspects or devices.

#### 4.12 Arrangements for Imports

Machinery imported from a country outside the European Economic Area for use in the EEA must be in conformity with the *Machinery Directive* when placed on the market and put into service. If the manufacturer sells machinery or safety components into the EEA s/he (or the authorised representative) will be responsible for ensuring conformity.

In some circumstances a company located in the EEA may purchase machinery from a non-EEA manufacturer without the manufacturer knowing where it is going. In this case the importer that places the machinery on the market (or the importer may be the user) takes on the responsibility for complying with the Directive.

#### **4.13 Arrangements for Second Hand Machinery**

The *Machinery Directive* applies to the initial placement of machinery and safety components on the market in the EEA. Thus the Directive applies to any second hand machinery imported from outside the EEA, when it is initially placed on the market. It does not apply to trade in second hand machinery already within the EEA.

#### **4.14 Enforcement**

Member states enforce legislation enacted to give effect to the *Machinery Directive*. A member state can initiate an administrative procedure to withdraw the product, to prohibit or otherwise restrict marketing of the machinery or safety component if it may endanger safety. This is the “safeguard clause” which allows member states to derogate from the obligation to allow free movement. In effect the member state is contesting the manufacturer’s declaration of conformity and must advise relevant parties of the reasons for taking this action. The member state’s action may apply to an individual machine or a series of machines if the hazard is inherent in the design. The member state must inform the European Commission immediately of the measures taken and the grounds for its decisions. They must indicate whether non-conformity is due to failure to satisfy essential requirements or incorrect application of the harmonised standards. They must also have sufficient technical evidence. The European Commission enters into consultation with the parties concerned.

It is also possible that a member state may determine that machinery or a safety component is dangerous but the product does comply with the relevant standard(s). In this case the competent national authority of the member state may contest any harmonised European standard which does not adequately address essential health and safety requirements.

It is important to note that a member state can only take action in relation to placing machinery or safety components on the market or putting them into service. Action cannot be taken while products are still in the manufacturing stage.

In the UK the Health and Safety Executive (HSE) is responsible for enforcing *The Supply of Machinery (Safety) Regulations* in relation to machinery and safety components that are supplied for use at work. Local authority Trading Standards Officers enforce the same regulations in relation to machinery and safety components supplied for private use. The HSE may prohibit or restrict supply (in conjunction with the European Commission). It can initiate a prosecution with a fine on conviction or a period of imprisonment or both (Department of Trade and Industry, 1995: 3 and 11).

### **Progressive Summary – Conformity of Machinery in the European Union**

The key to compliance with the *Machinery Directive* is demonstrating conformity with the essential health and safety requirements. Manufacturers (or others responsible) may ensure that the machinery (or safety component) is designed and constructed according to relevant harmonised standards. There is a “presumption of conformity” for machinery and components that comply with relevant standards. The harmonised standards are an important source of technical guidance about safe design and construction for particular types of machinery or components, for particular health and safety matters (for example ergonomic aspects) and for processes such as risk management.

In general, machinery is subject to a process of self-assessment by the manufacturer who records the means used to comply with the essential health and safety requirements in a technical construction file. However, third party technical assessment by a “notified body” is required for some types of plant. This is the “EC type examination”. It involves examination of the machinery as well as the manufacturer’s technical construction file.

As well as documenting how the essential health and safety requirements have been addressed, the technical construction file contains detailed design drawings, results of tests performed, identifies any relevant harmonised standards complied with and includes the instructions produced for the machinery or component. It provides a substantial information base for third party assessment by either a notified body or for an OHS inspectorate to evaluate compliance. The CE mark and “declaration of conformity” represent a commitment made by the manufacturer that the machinery complies with relevant requirements.

#### **4.15 Comparison of the Regulation of Machinery Safety in the European Union and in Australia**

Europe is an important source of plant and machinery that is used at work. Some machinery is imported into Australia in which case it is expected to comply with the law of the jurisdiction into which it is imported. In turn Australian manufacturers are expected to comply with the *Machinery Directive* if they wish to place their products on the market within the European Economic Area. There are some common features between the Australian OHS regulatory regime for plant and the regime created by the *Machinery Directive*. For example, both adopt a risk management approach, require provision of information, make use of technical standards, require self-assessment of machinery while also providing for third party verification for specific types of machinery.

However, there are some important differences. Perhaps most fundamental is the different mix of performance-outcome, systematic process and specification provisions used in the two regimes. In brief, the Australian regime is predominantly process-based. Much of the OHS regulations, codes of practice or advisory standards (Qld) are concerned with the process of hazard identification, risk assessment and risk control, as it applies to different duty holders. These instruments set down a broad process (with variations in detail between the jurisdiction). The attention of those identifying hazards is drawn to a limited range of hazards that they must identify (see for example clause 65 of the *National Standard for Plant*). For a limited range of plant there are specific technical standards that apply and third party design verification is required for certain high risk items of plant.

In contrast, the European Union regime, through the “essential health and safety requirements”, places much stronger emphasis on performance-outcomes to be achieved. The essential health and safety requirements draw the manufacturer's attention to a much wider range of hazards and problems that they must address if they arise in the machinery designed and constructed. There is a limited range of machinery that requires third party verification, the “EC-type assessment”. This assessment can only be undertaken by an independent body recognised by the authority in the member state and notified with the European Commission (a “notified body”). The types of machinery deemed higher risk and therefore warranting independent third party assessment are quite different from those in Australia. (No comment is made here on the types of plant, only that they are notably different: for example, cranes, hoists and scaffolding in Australia compared with saws, spindle moulding machines, and presses in Europe). Finally, there is a dramatic difference in the wide range of plant for which technical guidance is provided through the harmonized standards. These provide a benchmark both for addressing particular kinds of design matters, for example ergonomic factors, safety distances and safety components as well as specific standards for particular types of machinery. If machinery (or safety components) comply with relevant harmonised standards, corresponding to essential health and safety requirements, there is a “presumption of conformity”.

It could be said that, in contrast to the European Union regime, the Australian OHS legislation places obligations on designers, manufacturers and others, but gives them very little to go on. There is a lack of definition of the OHS outcomes to be achieved and technical standards are a point of reference for only a limited range of plant.

Some further areas of difference between the Australian and European arrangements are worth highlighting for consideration. First, in Europe the essential health and safety requirements are the criteria to determine if it is necessary to prohibit or restrict a machine from being placed on the market. Implicitly machinery must be designed and constructed to meet the essential health and safety requirements. The point of enforcement is when the machinery (or safety component) is placed on the market or put into service. If it does not meet the essential requirements, the competent authority (OHS inspectorate) may intervene at the point of supply, as distinct from when the machinery is being designed or manufactured. Second, the party with principal responsibility is the manufacturer who places the machinery on the market (unless another party is responsible for placing the machinery on the market). This is in contrast to the range of duties that apply to those who design, manufacture, import,



supply (in all forms), install and erect plant in Australia. (The issue of which parties upon whom to place responsibilities is discussed further in Part Five of this report).

Third, the Directive applies to machinery that is both for occupational as well as for non-occupational use. It also applies to safety components of machinery. While the Australian OHS statutory duties in relation to plant and its components, could extend to safety components, this is clearer in the European context. Specific inclusion of safety components is valuable in view of the fact that failure or malfunction of these is critical and endangers health and safety. A fourth difference is that the manufacturer in Europe is expected to address intended as well as other foreseeable forms of use, including abnormal use. It is not sufficient to design and construct for "proper use". Further to this, the contents of the record of assessment, the "technical construction file" are specified in the European regime, in sufficient detail to provide a basis for determining compliance (see section 4.7 for detail). There are also essential requirements regarding the scope of information that is to accompany each machine (see section 4.9 for details).

An area in which Australian OHS law is more explicit is the duties in relation to suppliers of second hand plant. The duties of suppliers in general extend to suppliers of second hand plant. This is not addressed in the *Machinery Directive* unless second-hand plant is brought into the EEA for the first time.

It is also noteworthy that in the European regime, the system for taking action against a manufacturer that does not comply with the essential health and safety requirements, has a centralised element. While a member state may initiate action to prohibit or restrict supply of machinery, require certain modifications, or prosecute the person who places it on the market or into service, the authority in the member state must inform the European Commission immediately of the measures taken and provide technical evidence of the grounds for its decisions. The European Commission then enters into consultation with the parties concerned.

A final point of difference is that the European arrangements bring together occupational with public safety requirements, embracing machinery supplied for use at work with that supplied for private use. A single set of requirements apply to both aspects but may be enforced by separate agencies, as is the case in the UK where both OHS and consumer protection agencies are involved in enforcing the same regulations. It is interesting to reflect on this merging of requirements. The following section of this report reviews the Australian *Trade Practices Act 1974* (Cwlth), which represents the other half of the system in the Australian context.

### **Progressive Summary – Important Differences in the European Union Regime for Machinery Safety**

There are some important areas of difference between the Australian OHS legislation and the European regime for regulating machinery safety. These differences provide some food for thought in considering future directions for safe design regulation. Of particular note are:

- the centrally coordinated, cross-jurisdictional arrangements for establishing the legal framework and for taking action against those who place unsafe machinery (or safety components) on the market or put these into service;
- the application of requirements to a wide range of machinery as well as safety components;
- the use of essential health and safety requirements to give focus to the risk management process and clarify the range of matters to address in safe design and construction;
- the types of plant requiring third party technical assessment and the criteria for selection and notification of these based on competence and independence;
- the use of evidentiary standards to provide technical benchmarks for safe design and construction;
- the requirement for a technical construction file that comprehensively records the action taken to address essential requirements, results of testing and examination and includes the information to be supplied with the product.

## 5. Regulation of Product Safety in Australian Trade Practices Law<sup>16</sup>

### 5.1 The Trade Practices Act and its Administration

The principal objective of the *Trade Practices Act 1974* (Cwlth), the TPA, is "... to enhance the welfare of Australians through the promotion of competition and fair trading and provision for consumer protection" (TPA: s 2). Provisions relevant to product safety and consumer protection matters can be found in:

- Part V, Division 1A - Product Safety and Product Information;
- Part V, Division 2A - Actions Against Manufacturers and Importers of Goods;
- Part VA - Liability of Manufacturers and Importers for Defective Goods;
- Part VI - Enforcement and Remedies.

The TPA is administered by the Australian Competition and Consumer Commission (ACCC), an independent statutory authority formed in November 1995. The ACCC was formed by the merger of the former Trade Practices Commission and the Prices Surveillance Authority. The ACCC tends to focus on industry-wide conduct that affects large numbers of consumers and matters with national implications such as nationally advertised and supplied goods or matters involving national firms. Government policy on consumer protection matters is developed by the Consumer Affairs Division of The Treasury.

There is also state/territory "application legislation" which mirrors the federal legislation (see Section 5.7 for an outline of the "fair trading" arrangements in New South Wales). The associated state/territory application legislation is administered by the relevant state/territory agency responsible for consumer protection and fair trading matters. The state/territory agencies tend to deal with enforcement and compensation matters within the state/territory.<sup>17</sup>

### 5.2 Scope, Application and Responsibility

The provisions of the TPA relating to product safety, product information and product liability restrict the actions of corporations in relation to the *supply* of goods that are intended to be used or are of a kind likely to be used by a *consumer*.

Taking into account the definitions of "supply" included in section 4 of the TPA and the definition of "consumer" contained in section 4B of the TPA, the relevant

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<sup>16</sup> This summary is compiled principally from the *Trade Practices Act 1974* with additional explanation from the Australian Competition and Consumer Commission accessed online October 2002 at <http://www.accc.gov.au/> and in personal communication.

<sup>17</sup> Under the state/territory Fair Trading Acts, potential bases for claims for personal injury and death are found in unconscionable and misleading or deceptive conduct provisions. There are also certain state/territory Acts that contain provisions equivalent to or that mirror certain provisions of Part V Div1A (product safety) and Part V Div 2A (product liability) of the *Trade Practices Act* (Ipp et al, 2002: 72-73).

provisions apply to goods supplied by way of sale, exchange, lease, hire or hire-purchase where:

- (a) the price is less than the prescribed amount (\$40,000); or
- (b) the price is more than the prescribed amount (\$40,000) and the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, or the goods consist of a commercial road vehicle.

(The relevant definitions from the TPA are presented in Table 6 below).

Thus if the price of goods is \$40,000 or less, even if the goods are supplied for other than personal use (for example, for use at work), the TPA offers consumer protection, provided that the goods are not for re-supply or goods to be transformed or used up in a work process. If the price of goods is more than \$40,000 the TPA only offers protection in relation to goods that are acquired for personal, domestic or household use. The consumer may be an individual or a business. For example, if a machine costing \$30,000 is purchased by a business to use in its operation, then the business is a consumer for the purposes of the TPA and entitled to consumer protection.

In relation to product safety, product information and liability matters (Parts V: Div 1A and Part VA of the TPA), the relevant duties are placed on "corporations". A corporation is a body corporate that is:

- (a) a foreign corporation; or
- (b) a trading corporation or financial corporation formed within the limits of Australia; or
- (c) incorporated in a territory; or
- (d) the holding company of a body corporate.

In general, in regard to product safety matters, those against whom legal action might be taken are manufacturers and importers of defective goods. In some cases a wholesaler or retailer may also be involved in legal action.

## **5.3 Product Safety**

### **5.3.1 Ministerial notices**

The Minister may publish a "warning notice" in the Commonwealth *Gazette* containing a statement that the specified goods are under investigation (TPA: s 65B). Where it is suspected that the use of particular goods involves possible risks, the notice may also give a warning of the risks involved. An investigation is conducted to determine if the goods may cause injury. Once an investigation is completed the Minister must, as soon as practicable publish a notice in the *Gazette* announcing the results of the investigation. The notice may also announce what action it is proposed to take in relation to the goods.

**Table 6: Trade Practices Act Definitions of "Supply" and "Consumer"**

**S4:** "*supply*, when used as a verb, includes:

- (a) in relation to goods—supply (including re-supply) by way of sale, exchange, lease, hire or hire-purchase; and
- (b) in relation to services—provide, grant or confer; and, when used as a noun, has a corresponding meaning, and *supplied* and *supplier* have corresponding meanings."

**S4B:** defines *consumer* as:

- "(a) a person shall be taken to have acquired particular goods as a consumer if, and only if:
  - (i) the price of the goods did not exceed the prescribed amount (\$40,000); or
  - (ii) where that price exceeded the prescribed amount—the goods were of a kind ordinarily acquired for personal, domestic or household use or consumption or the goods consisted of a commercial road vehicle;
 and the person did not acquire the goods, or hold himself or herself out as acquiring the goods, for the purpose of re-supply or for the purpose of using them up or transforming them, in trade or commerce, in the course of a process of production or manufacture or of repairing or treating other goods or fixtures on land; and
- (b) a person shall be taken to have acquired particular services as a consumer if, and only if:
  - (i) the price of the services did not exceed the prescribed amount; or
  - (ii) where that price exceeded the prescribed amount—the services were of a kind ordinarily acquired for personal, domestic or household use or consumption."

### 5.3.2 Mandatory standards

It is an offence for a corporation to supply goods that are intended to be used, or are of a kind likely to be used, by a consumer if:

- (a) the goods do not comply with a prescribed "consumer product safety standard" for the goods;
- (b) there is a notice in force declaring the goods to be unsafe;
- (c) there is a notice in force imposing a permanent ban on the goods (TPA: s 65C).

A notice declaring goods as unsafe goods remains in force for 18 months after the date of publication of the notice in the *Gazette*, unless it is revoked before the end of that period. A permanent ban may be imposed where a period of 18 months has elapsed after publication of a notice in the *Gazette* declaring goods to be unsafe goods and there is not a prescribed consumer product safety standard in respect of the goods. It is also prohibited to export goods if their supply is prohibited in Australia unless the Minister has approved their export. This requires Parliamentary scrutiny.

The consumer product safety standards may be prescribed by regulation or declared by the Minister, by notice in the Commonwealth *Gazette* (TPA: s 65E). The standards may set out requirements reasonably necessary to prevent or reduce risk of injury to any person in relation to:

- (a) performance, composition, contents, methods of manufacture or processing, design, construction, finish or packaging of the goods;
- (b) testing of the goods during, or after the completion of, manufacture or processing; and
- (c) the form and content of markings, warnings or instructions to accompany the goods.

Some examples of mandatory product safety standards are AS/NZS 1841 and AS/NZS 4353 which address portable, non-aerosol fire extinguishers and portable, aerosol type fire extinguishers respectively; and AS/NZS 2693 and AS/NZS 2615 which address vehicle and trolley jacks respectively.

It is also an offence to supply goods for use by a consumer, if a relevant consumer product information standard has not been complied with. The consumer product information standards are also prescribed by regulation or declared by the Minister, by notice in the Commonwealth *Gazette* (TPA: s 65E). They consist of requirements that are reasonably necessary to give persons using the goods information about the quantity, quality, nature or value of the goods. This may include requirements:

- (a) to disclose information relating to the performance, composition, contents, methods of manufacture or processing, design, construction, finish or packaging of the goods; and
- (b) specifying the form and manner in which that information is to be disclosed on or with the goods.

Examples of mandatory information are direction about the safe use of equipment and the requirements for labelling of tobacco products.

### **5.3.3 Compulsory product recalls**

In some circumstances a “compulsory product recall” may be imposed (TPA: s 65F). The Minister may require the compulsory recall of goods (supplied on or after 1 July 1986) where:

- (a) the goods will or may cause injury to a person; or
- (b) there is a prescribed consumer product safety standard and the goods do not comply with that standard; or
- (c) there is a notice in force under section 65C of the TPA (goods declared unsafe or banned);

and it appears to the Minister that the supplier has not taken satisfactory action to prevent the goods causing injury.

Action is taken by notice in the Commonwealth *Gazette* and may include requiring the supplier to do one or more of the following:

- (a) recall the goods within a specified period (in accordance with any directions given by the Minister);

- (b) disclose to the public or to specified person the nature of a defect in, or a dangerous characteristic of, the goods; the circumstances in which the use of the goods is dangerous; or procedures for disposing of the goods specified in the notice;
- (c) inform the public, or specified persons that the supplier undertakes to repair the goods (except where the notice identifies a dangerous characteristic of the goods); replace the goods; refund the price of the goods.

Prior to the publishing of a notice in the *Gazette* a supplier may request that the ACCC hold a conference in relation to the proposal to publish such a notice (TPA: s 65J). Where goods subject to recall have been supplied outside Australia, the supplier must notify the person to whom the goods were supplied.

#### **5.3.4 Notification of voluntary recalls**

A corporation may voluntarily take action to recall goods because the goods will or may cause injury. Such voluntary recalls must be advised to the Minister within 2 days after taking the recall action, setting out the nature of the defect in, or dangerous characteristic of, the goods (TPA: s 65R).

### **Progressive Summary – Regulation of Product Safety by the *Trade Practices Act* (Cwlth)**

In Australia the *Trade Practices Act 1974* (TPA), administered by the Australian Competition and Consumer Commission (ACCC), regulates the conduct of corporations in regard to various matters, including the safety of products supplied to consumers. The TPA and its enforcement focuses on industry wide and other conduct with national ramifications. There is also state/territory "application legislation" which mirrors the federal legislation and is administered by the relevant state/territory agency responsible for consumer protection and fair trading matters. The state/territory agencies tend to deal with enforcement and compensation matters within the state/territory.

The broad definition of "consumer" under the TPA extends protection to both individuals and businesses that acquire goods (by purchase, exchange, lease, hire or hire-purchase). While consumers will often be persons acquiring goods for personal, domestic or household use, if the price of the goods is less than \$40,000 and the goods are not acquired for re-supply or to be transformed or used up in a work process, the person acquiring the goods is also included within the definition of a consumer. Thus, some goods acquired for use at work are within the scope of the TPA. For example, power tools costing \$100 or even wood chipping and mulching machines costing \$30-40,000, fall within the scope of the TPA.

The TPA provides various mechanisms to address product safety. These include:

- investigation of goods where their use is suspected of involving risks to health or safety;
- issue of a Ministerial "warning notice", published in the *Commonwealth Gazette*, and warning of the risks involved with particular goods, and action taken in relation to the goods;
- preventing supply of consumer goods that do not comply with a prescribed (mandatory) "consumer product safety standard" or "consumer product information standard" (these standards are often Australian Standards are parts of these);
- preventing supply of goods declared to be unsafe or imposing a permanent ban (by notice in the *Gazette*);
- imposing a compulsory product recall;
- requiring disclosure to the public or to specific parties of the nature of safety defects or dangerous characteristics;
- requiring that the responsible party undertake to repair, replace or refund the price of goods; and
- notification to the Minister of any voluntary recall initiated by a corporation.



## **5.4 Enforcement of Product Safety Requirements**

### **5.4.1 Power to obtain information, documents and evidence**

The Minister and authorised officers have prescribed powers. They may require a Corporation that is believed to be supplying goods that will or may cause injury, to furnish information or evidence relating to the products (TPA: s 65Q). An authorised officer may also enter premises to inspect goods; take samples; inspect, make copies or take extracts of documents; inspect equipment used in the manufacturing, processing or storage of goods of that kind. These powers of the authorised officer require a warrant unless exercise of powers is required without delay.

The *Trade Practices Act* also establishes a range of actions that may be taken by the court as a result of prosecution, as set out below.

### **5.4.2 Injunctions**

In proceedings under s 79 of the TPA, for contravening Part V of Act, the court may grant an injunction under section 80 of the Act in relation to conduct that constitutes the contravention or other conduct of that kind. An injunction may be granted where the court is satisfied that a person has engaged or is proposing to engage in conduct that constitutes a contravention. Even if the court is not so satisfied it may grant an injunction by consent of all the parties to the proceedings. An application for an injunction is made by the Minister or by the ACCC.

### **5.4.3 Order to disclose information or publish advertisement**

Where the court is satisfied that a person has engaged in conduct constituting a contravention of a provision of Part V of the TPA, the court may make either or both of the following orders:

- (a) an order requiring that person or a person involved in the contravention to disclose specified information to the public or to particular persons;
- (b) an order requiring that person or a person involved in the contravention to publish, at his or her own expense, advertisements in a specified manner and at a specified time (TPA: s 80A).

### **5.4.4 Other orders for loss or damage**

The court may make orders in special circumstances where it finds that a person who is a party to the proceedings has suffered, or is likely to suffer, loss or damage by the conduct of another person that was engaged in the contravention. An order(s) may be made against the person who engaged in the conduct, to compensate for or to prevent or reduce the loss or damage. Such orders include declaring a contract void, varying a contract, refusing to enforce a contract, an order to refund property or money, an order to repair or provision of parts, an order to supply specified services (TPA: s 87).

#### **5.4.5 Enforcement of undertakings**

The ACCC may accept a written undertaking given in connection with any of its powers or functions (TPA: s 87B). For example, an enforceable undertaking might be a commitment to implement a "trade practices compliance program". If the ACCC considers that the person who gave the undertaking has breached any of its terms, it may apply to the court for an order. If the court is satisfied that the person has breached a term of the undertaking, the court may make all or any of the following orders:

- (a) an order directing the person to comply with that term of the undertaking;
- (b) an order directing the person to pay to the Commonwealth an amount up to the amount of any financial benefit that the person has obtained directly or indirectly and that is reasonably attributable to the breach;
- (c) any order that the court considers appropriate directing the person to compensate any other person who has suffered loss or damage as a result of the breach;
- (d) any other order that the court considers appropriate.

The Secretary to the Department may also accept a written undertaking given in connection with a matter in relation to which the Secretary has a power or function under the Act (TPA: s 87C). Similarly, if the Secretary to the Department considers that the person who gave the undertaking has breached any of its terms, the Secretary may apply to the court for an order (as outlined above).

#### **5.4.6 Defences in prosecutions**

In a prosecution in relation to Part V of the TPA it is a defence if a defendant establishes:

- (a) that the contravention was due to reasonable mistake; or
- (b) that the contravention was due to reasonable reliance on information supplied by another person (not associated with the corporation or individual contravening the Act); or
- (c) that:
  - (i) the contravention was due to the act or default of another person, to an accident or to some other cause beyond the defendant's control; and
  - (ii) the defendant took reasonable precautions and exercised due diligence to avoid the contravention (TPA: s 85).

### **Progressive Summary – Enforcement of the *Trade Practices Act***

The *Trade Practices Act* establishes a range of actions that may be taken by the court as a result of prosecution. These include:

- granting an injunction in relation to specific conduct;
- making an order requiring that a person involved in the contravention disclose specified information to the public or to particular persons;
- making an order requiring that a person involved in the contravention publish advertisements in a specified manner and at a specified time;
- making an order to prevent or reduce loss or damage including declaring a contract void, varying a contract, refusing to enforce a contract, an order to refund property or money, an order to repair or provide replacement parts, an order to supply specified services;
- making an order in relation to a written undertaking given to the ACCC or the Secretary of the Department (an enforceable undertaking), where that undertaking has been breached;
- imposing a fine.

Grounds for defence in a prosecution are: (1) that the contravention was due to reasonable mistake; (2) that the contravention was due to reasonable reliance on information supplied by another person; (3) that the contravention was due to the act or default of another person; (4) that the contravention was due to an accident or some other cause beyond the defendant's control; and (5) that the defendant took reasonable precautions and exercised due diligence to avoid the contravention.

## **5.5 Liability for Safety Defects and Compensation for Loss or Damage**

A “consumer” who has suffered damage or loss is entitled to claim compensation under the product liability provisions of the TPA. A person is deemed to have suffered damage or loss if:

- (a) goods supplied do not comply with a prescribed consumer product safety standard, or the goods were supplied in contravention of a notice declaring them to be unsafe goods or imposing a permanent ban on the goods, or a prescribed consumer product information standard has not been complied with; and
- (b) the person suffers loss or damage due to a defect in, or a dangerous characteristic of the goods, or due to not having particular information in relation to the goods; and
- (c) the person would not have suffered the loss or damage if the goods had complied with the standards or had not been supplied (TPA: s 65C, paras (8) and (9); s 65D, para (7); TPA: s 65H).

The product liability provisions that allow a person to take legal action for compensation if s/he suffers injury or loss due to a defective product, apply to products supplied after July 1992. In general such action is taken against the manufacturer, the

importer or a supplier who sells "own brand" goods manufactured for it under license. If the manufacturer is unknown to the person seeking compensation, the action may be pursued through one or more suppliers of the goods (TPA: s 75AJ).

In determining whether safety is deficient, regard is had to the manner of marketing, packaging, the use of any mark on the goods, instructions or warnings, what may reasonably be expected to be done with the goods, the time of supply. A manufacturer is liable to compensate an individual who suffers an injury caused by a defect in goods supplied by it, for the amount of the individual's loss (TPA: s 75AD). Other person's who suffer loss because of the first individual's injuries are also entitled to claim compensation (TPA: s 75AE). Claims may also be made in relation to goods destroyed or damaged due to the defective goods (TPA: s 75AF); and in relation to land, buildings or fixtures destroyed or damaged (TPA: s 75AG).

The entitlement to claim compensation does not apply to a loss that could be recovered under a law relating to workers' compensation or a law that gives effect to an international agreement. Thus in relation to goods used at work, such claims would be restricted to self-employed persons not covered by workers compensation arrangements.

A person may commence a liability action at any time within 3 years after the time the person became aware, or ought reasonably to have become aware, of the alleged loss, the defect and the identity of the person who manufactured the action goods. A liability action must be commenced within 10 years of the supply by the manufacturer of the action goods (TPA: s 75AO).

Certain defences are permitted in liability actions (TPA: s 75AK). It is a defence to establish that:

- (a) the defect in the goods alleged to have caused the loss did not exist at the supply time; or
- (b) the goods had that defect only because there was compliance with a mandatory standard for them; or
- (c) the state of scientific or technical knowledge at the time when they were supplied by the manufacturer was not such as to enable that defect to be discovered; or
- (d) if they were comprised in other goods (*finished goods*)—that defect is attributable only to:
  - (i) the design of the finished goods; or
  - (ii) the markings on or accompanying the finished goods; or
  - (iii) the instructions or warnings given by the manufacturer of the finished goods.

Further to this, the amount of compensation payable may be reduced by contributory acts or omissions by the injured individual or another person responsible for that individual (TPA: s 75AN).

## **Representative actions by the ACCC**

The ACCC may commence a liability action on behalf of one or more persons who have suffered the loss (TPA: s 75AQ). The Commission may only make an application under this section if it has obtained the written consent of the person, or each of the persons, on whose behalf the application is being made. This is intended to improve access to the law and allow the ACCC to act where goods have caused or may cause widespread detriment.

### **5.6 Actions Against Manufacturers and Importers of Unsuitable Goods**

Over and above the provisions already discussed in relation to safety defects, actions may also be taken against manufacturers and importers that supply goods that are unsuitable for the purpose identified by the consumer acquiring those goods (TPA: Div 2A). In this Division "goods" refers to goods of a kind ordinarily acquired for personal, domestic or household use or consumption. Thus these provisions are more restricted than other requirements in relation to consumer protection which apply in relation to goods supplied to consumers (see definition in Section 5.1 above).

The requirements apply in relation to goods supplied to a consumer who has made known to the manufacturer or the supplier that the goods are being acquired for a particular purpose, and the goods supplied are not reasonably fit for that purpose (TPA: ss 74B). If the consumer suffers loss or damage in this instance due to the fact that the goods are unsuitable, the manufacturer is liable to compensate the consumer for the loss or damage. The requirements do not apply if the goods are not fit for purpose due to an act or default of a person other than the corporation or its agent(s), or due to a cause independent of human control.

Similar provisions apply in relation to goods supplied with false descriptions (TPA: s 74C), goods of unmerchantable quality (TPA: s 74D), bulk goods that do not correspond to samples (TPA: s 74E), goods for which facilities or parts are not available for repair (TPA: s 74F), failure to comply with an expressed warranty (TPA:s 74G). Manufacturers are required to indemnify other suppliers of goods in relation to these matters (TPA: s 74H).

### **Progressive Summary – Product Liability and Compensation**

A “consumer” who has suffered damage or loss is entitled to claim compensation (from the manufacturer or other supplier) under the product liability provisions of the TPA (if goods were supplied after July 1992). Some bases for claims include non-compliance of goods with prescribed consumer product safety or information standards, goods supplied in contravention of a notice declaring them to be unsafe or imposing a permanent ban. As well as personal injury, claims may be made in relation to goods destroyed or damaged due to the defective goods, and in relation to land, buildings or fixtures destroyed or damaged. The ACCC may also commence a liability action on behalf of one or more persons who have suffered loss. This is intended to improve access to the law and allow the ACCC to act where goods have caused or may cause widespread detriment.

A consumer’s entitlement to claim compensation does not apply to a loss that could be recovered under workers' compensation law. Thus in relation to goods used at work, such claims would be restricted to self-employed persons who are not covered by workers compensation arrangements.

Over and above liability for defective goods, actions may also be taken against manufacturers and other suppliers in relation to goods that are acquired for personal, domestic or household use. Action may be taken if goods are unsuitable for the purpose identified by the consumer acquiring those goods, or if any of the following apply: false descriptions; goods of unmerchantable quality; bulk goods that do not correspond to samples; goods for which facilities or parts are not available for repair; or failure to comply with an expressed warranty.

## **5.7 Regulation of Product Safety by the Australian States and Territories – the Example of New South Wales**

As noted in Section 5.1 of this report there is also state/territory "application legislation" which mirrors the federal legislation. While the ACCC tends to focus on industry-wide conduct that affects large numbers of consumers and matters with national implications, the state/territory agencies tend to deal with enforcement and compensation matters within the state/territory, especially in relation to goods supplied for personal, domestic and household use. As an example, Table 7 presents a summary of the arrangements in New South Wales.

**Table 7: Fair Trading and Product Safety in New South Wales**

In New South Wales the *Fair Trading Act* requires that certain goods comply with safety requirements before they can be supplied, and certain information about a product must be provided with that product when it is supplied. "Supply" is defined to include sale, exchange, lease, hire, hire-purchase and "give-aways", for example at trade fairs and through promotions.

The Department of Fair Trading's Safety and Standards Branch administers the legislation and conducts market place surveys to identify products that don't meet acceptable standards. They also offer advice about relevant tests and sources of expertise for testing products. Where there are problems with a product, the Department has the power to remove unsafe goods from sale. This might include recalling dangerous products or a public warning of a particular defect, or that the product may be dangerous. The Department of Fair Trading can also provide advice on recall procedures.

Manufacturers and distributors may initiate voluntary recalls by acting promptly to remove from sale or rectify unsafe products that have already been sold. If a voluntary recall of defective goods is initiated the company must notify the Federal Minister responsible for consumer affairs and the Director-General of the NSW Department of Fair Trading, within two days of the recall being made.

Penalties can be imposed under the Fair Trading Act for breach of product safety laws. The penalty is up to \$22,000 for individuals and \$110,000 for companies.

Source: NSW Department of Fair Trading, Safety and Standards Branch (2001)

## **5.8 Final Comments on the Application of Australian Trade Practices Law to the Safety of Goods Supplied for Use at Work**

Unlike the Australian OHS statutes or the European *Machinery Directive*, the *Trade Practices Act* focuses principally on the kind of action that can be taken against a corporation (manufacturer or importer) for supply of goods in an unsafe or defective conditions. There is little focus on preventive health and safety requirements, other than prescription of a limited number of mandatory product safety or product information standards.

Nonetheless, action to restrict or prohibit supply of unsafe goods is not confined to goods to which a mandatory standard applies. If goods are determined to be unsafe a

range of action may be initiated including gazettal of warning notices, a temporary restriction on supply or a permanent ban and compulsory recall of goods. Voluntary recalls of defective goods are encouraged and if a voluntary recall is initiated it must be notified.

A range of sanctions and remedies are established by the TPA including fines, court imposed injunctions to prevent specific conduct, court orders to disclose information in a public advertisement and enforcement of undertakings entered into with the ACCC. The TPA's strict liability compensation provisions entitle persons who suffer loss as a result of defective goods to claim compensation, unless they would be otherwise entitled to claim under workers compensation legislation. Representative actions may be taken by the ACCC for goods that have caused widespread detriment

Although it would be possible for the ACCC to initiate action under the TPA in relation to some goods supplied for use at work, it would appear that such action is rare, and confined to goods that are also supplied for personal, domestic or household use. However, the register of voluntary recalls notified to the Minister identifies a range of items of machinery and equipment as likely (if not more likely) to be used at work as for personal use Product Recalls Australia (2002) lists 104 defective goods voluntarily recalled between January 2001 and October 2002. These include specific models of caterpillar excavators, multi-sanders, jack stands, tractors, combines, greens mowers, lawn tractors, petrol blower vacs, wheel dozers, cordless drills, all terrain vehicles, soil compactors, skid steer loaders.

The ACCC describes action it has taken in relation to vehicle jacks (Australian Competition and Consumer Commission, 2002a and b). A national product survey of vehicle jacks, which included inspection at retail outlets and arranging for some equipment to be tested, led to action against various importers and suppliers. For example, a vehicle jack supplied by Golden Sun Australia Pty Ltd failed to comply with safety labelling and some performance requirements, in contravention of section 65C of the Trade Practices Act. The ACCC raised its concerns with the supplier which ceased further supply and recalled those it had supplied. The company also undertook to implement a trade practices compliance program to reduce the possibility of similar breaches in the future. This constitutes a court-enforceable undertaking under section 87B of the Trade Practices Act.

There may be opportunities for cooperation between OHS inspectorates and the ACCC, especially in relation to unsafe plant supplied to larger markets across several states (for example, particular unsafe power tools). Further to this, the range of strategies, sanctions and remedies provided for in the *Trade Practices Act* could be considered as part of the OHS regulatory regime in relation to the various designed products. These matters will be taken up again in Part Six of this report.

The following section presents a final example of regulation relevant to plant safety and supply. This is the regulatory regime for the safety of electrical equipment.



## **6. Regulation of the Safety of Electrical Equipment in Australia**

### **6.1 National Coordination, State/Territory Legislation**

In Australia, electrical regulatory functions in relation to technical and safety matters are the responsibility of state/territory governments. Liaison between the eight Australian states/territories and New Zealand is coordinated by the Electrical Regulatory Authorities Council (ERAC). This body is the national decision maker in the area of technical electrical regulation.

Included in the responsibilities of the state/territory regulatory bodies is the safety of electrical equipment. The state/territory regulatory authorities administer a uniform approvals scheme, aimed at preventing the sale of unsafe electrical equipment in Australia. Electrical equipment approved in any Australian state or territory, after testing an accredited testing facility, is recognised in all other states or territories. Following is an outline of how some of the state regulatory authorities administer electrical equipment safety.

### **6.2 Electrical Equipment Safety in South Australia**

In South Australia the sale of certain electrical products is controlled under the provisions of the *Electrical Products Act 2000*. The Office of the Technical Regulator, is the approval Authority responsible for the administration of this Act. The *Electrical Products Act* specifies a list of proclaimed electrical appliances which have been identified as “high risk” because of a history of involvement in fire and /or electric shock incidents. These "high risk" items require pre-market approval before they can be sold. They must also carry an approval number to indicate their compliance with safety standards. This approval is required whether the item is manufactured locally or interstate, or imported from overseas (SA Office of the Technical Regulator, undated).

Approval is sought by producing a test report from a recognised laboratory, indicating compliance with the applicable Australian safety standard or an overseas equivalent. These standards set down the basic requirements the product must meet to be considered electrically safe. Typically these requirements include having levels of protection to guard against access to live parts, overheating from either normal operation or misuse, and fire propagation. If the report is acceptable, the Technical Regulator will then issue a certificate of approval which is generally valid for five years. The *Electrical Products Act* requires the Technical Regulator to monitor failures of electrical products and, if necessary, to implement corrective action to remove any hazardous products from the market place.

### **6.3 Electrical Equipment Safety in New South Wales**

In New South Wales, as well as administering requirements for product safety generally, the Department of Fair Trading also administers the *Electrical Safety Act* which requires that electrical appliances be designed and manufactured so that they will not, in normal use, result in electric shock, injury or death to the user, or fire damage to the user's property. The Department of Fair Trading (Safety and Standards Branch) administers a compulsory pre-sale certification scheme for specific types of

electrical appliances, and a voluntary certification scheme for all other electrical products. The Department maintains and analyses records of electrical accidents in order to target improvement of the safety of electrical appliances (NSW Department of Fair Trading, Safety and Standards Branch, 2001).

Under electrical safety laws, some household type electrical articles are "declared articles". They must be approved by the Department of Fair Trading or equivalent interstate regulator; be marked to show that approval; and comply with the required safety standard. Although the declared electrical articles that must be approved are household items, some could also be used at work. These include portable tools, soldering irons and hedge clippers. There are also some declared electrical accessories which must be approved if incorporated in electrical appliances. These are appliance connectors, compact fluorescent lamps, cord line switches, extra low voltage power supplies (for example AC/DC adaptors), flexible cords, input controlling devices, lamp holders and plugs.

Suppliers are expected to ensure that, prior to accepting delivery of goods, they ensure that they are provided with a copy of an Australian Certificate of Approval from the manufacturer or importer and that they verify that an approval mark appears on the electrical articles and accessories. Overseas Certificates of Approval and approval marks are not acceptable in Australia.

All other non-declared electrical articles must be safe to use and must comply with minimum safety requirements as set out in the *Electricity Safety (Equipment Safety) Regulation 1999*.

Fair Trading investigators visit suppliers to inspect electrical goods being sold and can take action to prosecute suppliers selling unapproved, unmarked or non-compliant declared electrical articles. The maximum penalty under the *Electricity Safety Act* is \$2,200 plus \$220 for each day the offence continues. The Department can also prohibit suppliers selling any electrical articles which are unsafe and it can require a public recall of unsafe articles already sold.

## **6.4 Electrical Equipment Safety in Queensland**

In Queensland the *Electrical Safety Act and Regulation 2002* sets out specific provisions for the approval, sale and use of electrical equipment and appliances. The regulatory authority is the Electrical Safety Office.

Electrical equipment is classified as being either Prescribed Electrical Equipment or Non-Prescribed Electrical Equipment. It is an offence under the *Electrical Safety Act and Regulation 2002* for Prescribed Electrical Equipment to be hired or sold unless the equipment is approved by an Australian regulatory authority, and is marked with the approval number or the Regulatory Compliance Mark (RCM). Prescribed electrical equipment is prescribed by class definition, as published in AS/NZS 4417.2. Approval is given on the basis of satisfactory testing for compliance to a relevant Australian Standard by a recognised testing laboratory with results given in a test report, the Certificate of Approval for Prescribed Electrical Equipment (Queensland Electrical Supply Office, 2002).

Non-prescribed equipment does not require approval but the seller has an obligation under the *Electrical Safety Act and Regulation 2002* to ensure the equipment is in a safe condition for sale and complies with the criteria set out in AS/NZS 3820. Compliance with a published specific equipment standard would normally satisfy the requirements of AS/NZS 3820. Manufacturers and importers of electrical equipment and appliances which are not prescribed may voluntarily submit any item to an approval authority for examination. Queensland issues a Certificate of Approval for a period of up to five years for articles submitted under this scheme if they are found to comply with the relevant Australian Standard. Electrical equipment with a Certificate Approval (non-prescribed) is also identified with a mark.

The Queensland Electrical Safety Office also maintains a database of electrical appliances recalled in Australia. The recall notices are provided by the responsible company through the Commonwealth Department of Treasury, Consumers Affairs Division and published in major Australian Newspapers. Amongst the items of electrical equipment recalled are a multi-sander, a cordless drill, angle grinder, screw driver, rotary hammer and welding unit.

## **6.5 Electrical Equipment Safety in Western Australia**

The office of EnergySafety WA (formerly the Technical & Safety Division of the Office of Energy) is now a directorate of the WorkSafe Division of the Department of Consumer and Employment Protection, the same body as is responsible for occupational health and safety. The *Electricity Act* requires that all electrical appliances sold are in a safe condition. "Safe" means that no significant risk of injury or death to any person, or damage to any property is likely result from the proper use of electrical equipment or appliance. The sale of many household electrical appliances is prohibited unless the approval of the Director of Energy Safety is obtained (WA Consumer and Employment Protection, 2002).

EnergySafety WA recommends that electrical equipment should be inspected and tested before it is sold, where its origin or history is not known to the seller. Testing is specifically required for some equipment under the *Electricity (Licensing) Regulations 1991*. Regulation 19 requires that the testing of electrical appliances/equipment be carried out by appropriately licensed persons (for example by an appliance service person or an electrician) in accordance with Australian Standard AS3760-1996. "In-Service Safety Inspection and Testing of Electrical Equipment." It is also recommended that the service centre/licensed person provides some evidence, such as a label or sticker, to be attached to the appliance/equipment to verify that the appliance/equipment has been checked and tested and is safe to use. The label/sticker should state the date that the appliance/equipment was tested, the relevant Australian Standard that it was tested to, and the licence number and signature of the person who carried out the checking and testing.

### **Progressive Summary – Regulation of Safety of Electrical Equipment**

In Australia, electrical regulatory functions in relation to technical and safety matters are the responsibility of state/territory governments. However, the state/territory regulatory authorities administer a uniform approvals scheme, aimed at preventing the sale of unsafe electrical equipment in Australia. Electrical equipment approved in any Australian state or territory, after testing at an accredited testing facility, is recognised in all other states or territories. Although the broad principles of testing high risk electrical appliances and approval apply across jurisdictions, there are some differences in the testing regimes with some jurisdictions requiring a recognised testing laboratory and others using a licensed service person or electrician.

The regulation of the safety of electrical equipment is an example of a regime that requires testing and approval of specified types of equipment before they can be placed on the market. It is an example of a system that aims to regulate safety of both locally made and imported equipment, with a focus on pre-sale compliance and compliance checks by enforcement officers at sale outlets. The requirement for an approval number on designated items provides enforcement officers and purchasers with a means to check compliance. A national register is maintained (by the Queensland authority) of recalled electrical equipment. This is another means by which purchasers may check their acquisitions.

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## Conclusions About Regulation for Safe Design of Plant

The role of upstream parties in ensuring the safe design and construction of plant has been regulated in the Australian OHS statutes for more than ten years. Statutory obligations are supplemented by OHS regulations and evidentiary standards. However, there is cause for concern that the existing regulatory regime may not be optimal. In part the variation between Commonwealth, state and territory jurisdictions presents some obstacles to upstream parties who are typically supplying plant across state/territory borders, if not importing from or exporting to overseas countries. In addition, the type and content of provisions provides a broad framework for managing safe design matters but relies on responsible parties having the knowledge, capacity and motivation to apply these to address the specific, often technical aspects, as required to ensure safe design and construction of specific types of plant.

Drawing on insights from the other Australian and overseas regulatory regimes discussed in Part Two, there are opportunities to enhance the existing elements of the Australian regulatory regime for the safe design of plant. Currently, the key elements of this framework are:

- a process of risk management that requires responsible parties to identify hazards, assess and control risks;
- a requirement to test and examine plant;
- a requirement to provide information;
- adoption of technical standards as a benchmark for safe design and construction;
- a requirement for verification of design for some types of plant that are designated as high risk.

These elements are intrinsically valuable. They reflect the approach taken in common law actions for damages arising from product safety defects (as discussed in Section 2.3, in Part One). They are also consistent with key elements of the approach taken in the European Union, which is the largest exporter of machinery and mechanical equipment in the world (European Commission, 2001: 3).<sup>18</sup>

In the interests of enhancing the Australian regulatory framework for safe design, these core elements could be usefully refined and supplemented. Some areas for consideration are as follows. First, there is some variation within and between the Australian OHS statutes and regulations in regard to the type of plant that is the focus of safe design regulation. Consistent definition is desirable and it is also worth considering whether to include critical safety components of plant in the scope of safe design requirements. Second, there is a need for consistency about which parties have responsibility and the nature of their responsibilities. It is appropriate that these responsibilities be consistent with the degree of control that a person has over safe design functions.

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<sup>18</sup> Machinery exports from the European Union total EUR 113 billion per annum, followed by the United States (EUR 66 billion) and Japan (EUR 57 billion) (European Commission, 2001: 3).

Third, in regard to the core process of risk management, there is value in identifying ways to provide greater clarity about the range of hazards and other characteristics of plant that are to be addressed. There should also be greater clarity about the range of life cycle phases of plant for which risks are to be addressed. The approach used in the European Union of prescribing essential health and safety requirements is one strategy for achieving this (see Section 4.5 for discussion of these). Fourth, application of a consistent hierarchy of control may facilitate understanding of this concept, emphasising elimination of hazards in design as the first priority, followed by designing and incorporating measures to minimise risks at the source.

Fifth, there is scope to consider wider use of technical standards (Australian and other internationally sourced standards) as benchmarks and to provide guidance about safe design and construction of plant, which is often of a specific and technical nature. Sixth, testing and examination of plant enables residual risks to be identified before plant is placed on the market or put into service. Greater guidance in this area is warranted. A seventh factor is the need for, a nationally consistent approach to third party verification of design. This requires consistency in the types of plant that require design verification, in the criteria for selecting a design verifier (based on independence from the designer and competence), and consistency in the use of technical standards in design verification. Finally, product safety information that is readable and informative should be a priority. Greater guidance about the scope, content and quality of information is warranted, in much the same way as is currently provided for hazardous substances (as discussed further in Part Four of this report).

As discussed, the Australian OHS statutes qualify the upstream duties with the expression “when properly used” which is confusing in that it may give the impression that it is sufficient to warn of risks in plant that is inherently unsafe or poses risks to health, rather than to ensure that plant is designed and constructed to be safe. The necessary qualification of the duties of care is provided by the existing mechanism of “practicability”<sup>19</sup> which balances the likelihood of the risk occurring against the cost, time and trouble necessary to avert the risk. This is consistent with the approach taken in the European *Machinery Directive* which requires consideration of normal use as well as uses that could reasonably be expected. There is a strong case to remove the expression “when properly used” from the relevant duties and to apply the concept of practicability to determine a reasonable standard of care.

Another feature of the European Union system that is worth considering is the technical construction file produced by the manufacturer (or their authorised representative). As well as documenting how the essential health and safety requirements have been addressed, the technical construction file contains detailed design drawings, results of tests performed, identifies any relevant harmonised standards complied with and includes the instructions produced for the machinery or component. It provides a substantial information base for third party assessment as well as evaluation of compliance by an OHS inspectorate. This is used in conjunction with the CE mark and “declaration of conformity” with relevant requirements.

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<sup>19</sup> For a discussion of the use of “practicability” and similar qualifying terms in OHS legislation, refer to Section 2.6 in Part One of this report.

In contrast to Australian or European OHS law, the Australian trade practices regulatory regime does not establish systematic processes for managing risks or performance-outcomes (see Section 2.5 for an explanation of these terms). However, trade practices legislation establishes various mechanisms for enforcement which are applicable to supply of unsafe plant (and other goods). With matters of unsafe design or construction, enforcement is most effectively targeted at preventing supply in the first instance, recalling unsafe items or rectifying faults. Trade practices laws has some mechanisms relevant to this and these are discussed further in Part Six of this report which deals with enforcement strategies.

In conclusion, Part Two of this report has outlined some existing regulatory regimes relevant to the safe design of plant. Some possible future directions have also been canvassed. Some of these ideas are also relevant to other types of designed-products. Accordingly, readers are invited to keep these in mind when considering the regulation of these other designed-products, in the following Parts of this report.

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## **PART THREE**

### **Regulation of Safe Design of Buildings, Structures and Other Construction Projects**

Part Three reviews existing regulatory regimes in Australia and overseas that are relevant to the safe design of buildings, structures and other construction projects. Construction projects include building and civil engineering works (such as bridges, roads and dams). They may involve earthworks, assembly and disassembly of prefabricated products, fitting out, alterations, renovations, repairs, dismantling, demolition, upkeep, drainage, painting, cleaning and other maintenance (European Commission, 1992).

There are two key focuses of this review. First, the construction phase of this work presents particular risks to those involved in these activities, as well as to members of the public in the vicinity of such work (Gunningham et al, 2000: xiv and 30). Second, buildings and structures comprise the place of work for many people and thus there are OHS considerations in relation to end users of buildings; those who work in, service, clean, repair and otherwise maintain the building or structure after it has been constructed. These OHS considerations include the more obvious structural safety aspects but extend to fire and electrical safety, risks associated with materials used in construction and fit out, amongst other matters.

Of the overseas regulation considered, the principal example is the European Union. In the United States responsibility for construction site safety is primarily placed on the employer, who is typically the principal contractor. However, the highly litigious nature of the US construction industry has resulted in other parties being brought into litigation involving worker injuries. In particular, owners have been drawn into such actions and in turn some owners are encouraging designers to address construction safety in their designs (Gambatese and Hinze, 1999: 643). Although safe design may be addressed in contracts, designer involvement in this area has largely been voluntary in the US. Thus regulatory models have not been identified for safe design in construction.

For each of the Australian and overseas regimes discussed, information is presented about: (1) the relevant legal instrument(s); (2) the area of law and its administration; (3) scope and application of the law; (4) who has responsibility; (5) the core provisions and elements of the legislation; (6) whether, and if so how, the duties are qualified; and (7) enforcement matters.

## **7. Regulation of Safe Design of Buildings and Structures in Australian OHS Legislation**

### **7.1 Overview of Building and Structure Design Duties**

Traditionally, the Australian OHS statutes have not regulated the role of designers of buildings and structures. They have focused on the construction phase, where the responsible parties are the principal contractor or sub-contractors, with responsibilities under the employer's duty of care. In some cases there are specific regulations or codes of practice that apply to construction work. However, these do not include design aspects.

Currently, a design focus is included only in a limited way in the OHS statutes in Western and South Australia (refer to Table 3 in Part One of this report). In Western Australia the duty in relation to safe design of buildings and structures is as follows (OSHA (WA): s23(3a)):

- "A person who designs or constructs any building or structure, including a temporary structure, for use at a workplace shall, so far as is practicable, ensure that the design and construction of the building or structure is such that -
- (a) persons who properly construct, maintain, repair or service the building or structure; and
  - (b) persons who properly use the building or structure, are not, in doing so, exposed to hazards".

Thus the duty of care in WA encompasses design to address the OHS of those involved in construction as well as end users, and those who maintain, repair or service the building or structure. The duty is also reflected in some approved codes of practice. For example, the codes of practice for excavation and for prevention of falls highlight the duty of designers of buildings and structures (Worksafe Western Australia Commission, 1996 and 1997). In particular, the *Code of Practice - Prevention of Falls at the Workplace* emphasises that designers should give consideration to prevention of falls in construction and in subsequent use and maintenance of the building or structure by providing for safe access and egress, guard rails and edge protection, temporary work platforms, and prefabrication and assembly of materials.

Recently, the *Final Report: Review of the Occupational Safety and Health Act 1984 (WA)* recommended the development of a code of practice in that state to emphasise the duties of those who design and construct buildings and structures, and in particular to clarify the responsibilities of architects, engineers and other designers (Laing, 2002: 82-83). Submissions to the review argued that awareness of OSHA (WA) s 23(a) duties was low and that designs were still being prepared without due regard to the safety of those involved in constructing, maintaining, repairing, cleaning and servicing buildings.

## 7.2 Safe Design Duties of Designers of Buildings and Structures in South Australia

The most developed regulation of the safe design of buildings and structures can be found in the South Australian *OHSW Act 1986* and the *OHSW Regulations 1995*.

### 7.2.1 Instruments, responsibility and administration

The relevant provisions of OHSWA (SA) are section 23A which places a duty of care on designers and owners of buildings that comprise or include a workplace; and section 24(2a) which establishes the duty of care of persons who design structures, manufacture or supply structural materials, and persons who erect structures. There are a number of provisions of the *OHSW Regulations 1995* that are also relevant to the design of buildings and structures (as discussed in Section 7.2.3 below). The Act and regulations are administered by the SA WorkCover Corporation (policy and standards setting) and Workplace Services, the OHS inspectorate.

### 7.2.2 Specific Duties Under OHSW (SA)

The duty under the SA *Occupational Health, Safety and Welfare Act 1986* (OHSWA (SA) section 23A(1)) establishes the duties of a person who designs a building. The duty to protect people who work in, on or about buildings, which could include the construction, phase as well as end use, maintenance and repair. The duty is as follows:

"A person who **designs a building** that is reasonably expected to comprise or include a workplace must -

- (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."

Building owners also have duties (OHSWA (SA): s 23A(2)). While these might normally apply after a building is constructed and commissioned, it is possible that the owner is also involved in the design and construction phases. The duty of building owners is as follows:

"The **owner of a building** that comprises or includes a workplace must -

- (a) ensure so far as is reasonably practicable that the building, and any fixtures or fittings within the building that are under the control of the owner, are in a condition that allows people who might work in, on or about the workplace to be 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".

The duties in relation to structures, as distinct from buildings, are found in OHSWA (SA): s 24(2a). This establishes that:

- "where any structure is to be erected in the course of any work -
- (a) the person who **designs the structure** must ensure so far as is reasonably practicable that the structure is designed so that the persons who are required to erect it are, in doing so, safe from injury and risks to health; and
  - (b) any person who **manufactures** any materials to be used for the purposes 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; and
  - (c) any person who **imports or supplies** any materials to be used for the purposes of the structure must ensure so far as is reasonably practicable that the materials are in such a state that as to be safe to any person who must use, handle or otherwise deal with the materials; and
  - (d) the person undertaking the **erection** of the structure must ensure so far as is reasonably practicable that the structure is safe during the course of its erection and subsequent use."

Paragraphs (a), (b) are specifically concerned with the safety of the structure and structural materials for people involved in erecting the structure. Paragraphs (c) and (d) have a broader meaning. They are concerned with ensuring that the structural materials imported or supplied, and the structure that is erected, are safe for any person using or dealing with the materials, as well as for the end use of the structure. Thus there is a focus both on the construction phase and on the risks to health and safety of those who work in, service, clean or repair and maintain the structure.

### 7.2.3 Specific Provisions under OHSWR (SA)

The duties established under OHSWA (SA)) are mirrored in the regulations made under the Act. Division 1.2 of the SA *Occupational Health, Safety and Welfare Regulations 1995* (OHSWR (SA)) requires each duty holder to ensure compliance with the regulations. In particular, owners of buildings are directed to comply with regulations applicable to them as listed in Schedule 1 to the regulations. Other upstream duty holders are directed to comply with Schedule 2. This includes designers of buildings; designers of structures; manufacturers, importers and suppliers of structural materials; and erectors of structures. In particular, OHSWR (SA): r 1.2.14, para (1) establishes that:

"For the purposes of the operation of these regulations, a regulation referred to in the first column of schedule 1 or 2 will, subject to any qualification contained in the relevant schedule, apply to the person or persons who fall within various categories indicated by the tick or ticks, or words that appear in the same row of the schedule as the reference to the regulation."

If more than one person may have a responsibility, then responsibility is to be shared between the parties, as set down in OHSWR (SA): r 1.2.14 paragraph (3):

"Subject to an express provision in a particular regulation to the contrary, if more than one person is under an obligation to comply with a regulation, each person is required to comply with that regulation to its full extent and without regard to the fact that another person or persons are also under an obligation to comply with the regulation."

All parties have access to the general defence set down in OHSWR (SA): r 1.2.15, if the person accused can prove that "the offence relates to a matter over which the accused did not have control and could not reasonably have been expected to have control."

Thus, the OHS statute and regulations in South Australia envisage that a range of persons whose actions may influence OHS will have responsibility and that this responsibility will be shared between the relevant parties. It is not a matter of determining which one is responsible. Rather each duty holder may be responsible and his/her responsibility is to be carried out to the extent of that person's control over a particular matter.

#### **7.2.4 Schedules to identify responsibilities**

The schedules to the OHSW regulations are the means of identifying the kinds of OHS matters for which a duty holder has responsibility. This is illustrated in Schedule 2 which is included as Appendix Three to this report.

According to Schedule 1 to the regulations, **owners of buildings** are expected to comply with regulations relating to access and egress, facilities, drinking water, floors of buildings, fragile roofing materials, space for occupants, electrical installations, provision and maintenance of residual current devices (RCDs), proximity to exposed cables, emergency preparedness and facilities, rescue arrangements, lighting, prevention of falls, ventilation, cleanliness, asbestos, lead, synthetic mineral fibres, demolition work, specific work performed in the building (electroplating, foundry work, welding), notification of certain work. Thus an owner who is involved from the design phase could be expected to ensure that these matters are addressed in the design of the building.

According to Schedule 2 **designers of buildings** are expected to comply with regulations relating to access and egress, facilities, drinking water, arrangements for sickness, seating, floors of buildings, fragile roofing materials, space for occupants, design of confined spaces, electrical installations, provision and maintenance of RCDs, proximity to exposed cables, emergency preparedness and facilities, lighting, design of manual handling, , noise control, prevention of falls, remote and isolated work, storage, traffic control, ventilation, asbestos, lead, abrasive blasting, demolition work, and specific work to be performed in the building (electroplating, foundry work, spray painting, welding).

In essence, the designer of the building is expected to address a wide range of hazards that could impact upon the health, safety or welfare of persons at work in, on or about

the building. This could include work in the building and construction phase as well as end use, maintenance and repair. The information sheet *Building owners and designers - how the regulations affect you* (SA WorkCover Corporation, 2000) emphasises the role of building designers and owners in protecting the health, safety and welfare of building occupants and those involved maintenance, repair and cleaning of the building.

According to Schedule 2, **designers of structures** must comply with the same regulations as designers of plant. These are the regulations relating to access and egress, design of confined spaces, electrical installations, provision of RCDs, emergency facilities, lighting, noise control, personal protection, prevention of falls, remote and isolated work, storage, traffic control, ventilation, designers of plant, risk management for plant and registration of design, asbestos, lead, abrasive blasting, demolition work, diving, and specific work to be performed (electroplating, excavation, foundry work, logging, spray painting, welding).

### **7.2.5 Enforcement and legal action**

The South Australian *OHSW Act* and *OHSW Regulations* are enforced by the OHS inspectorate in Workplace Services. Although safe design duties have not been a principal focus of enforcement activities, the inspectorate has been involved in serious incidents involving buildings and structures. For example, when a renovated section of an Adelaide golf club collapsed onto the occupants early in 2002, it was the OHS inspectorate that was called in to investigate and report to the responsible Minister, rather than local government officers. The OHS duties in relation to both designers and owners of buildings clearly give the OHS inspectorate a role in this area. This matter is still under investigation.

There has also been legal action taken under the common law for breach of statutory duty. In *Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR 304, a worker sued the designer of a floor fume extraction system for injuries sustained during the construction of the structure at the Whyalla blast furnace of BHP (see earlier discussion of this case at Section 2.6). The duty under consideration was the duty of the designer of the structure under the South Australian OHSW Act 1986 (s 24(2a)(a)). This requires that the person who designs the structure must ensure, so far as is reasonably practicable, that it is designed so that the persons who are required to erect it are, in doing so, safe from injury and risks to health. Liability was denied on the basis that the designer (Lurgi) had ensured the safety of the design so far as reasonably practicable. The High Court concluded that the requirement to ensure safety so far as is reasonably practicable "applies to matters which are within the power of the designer to perform or check, such as ascertaining what use the structure will be put to, what loads it will experience when being built and the nature of the location in which it is to be erected." (HCA 6: 319). The designer could not be expected to take account of factors outside the power of the designer to control, supervise or manage.

### **Progressive Summary - Regulation of Safe Design of Buildings, Structures and Structural Materials in the Australian OHS Legislation**

Although not widely regulated, there are examples of the regulation of safe design of buildings, structures and structural materials in the Australian OHS statutes. It is uncertain whether the term "structure" would extend to other significant civil engineering projects, such as bridges or dams, as the term is not defined in either of the relevant OHS statutes. The most developed provisions in relation to safe design of buildings and structures can be found in OHSWA (SA) and OHSWR (SA). The only other statute with provisions for safe design of buildings and structures is OSHA (WA). A code of practice to address the duties of those who design and construct buildings and structures is also proposed in WA.

The South Australian legislation quite comprehensively identifies a range of OHS matters to be addressed by duty holders from designers and owners of buildings, to designers of structures, manufacturers, importers and suppliers of structural materials and those who erect structures. A unique feature of OHSWR (SA) which enables this is the use of Schedules incorporated in the regulations to identify which duty holders are responsible for implementing specific regulations. From these schedules it is clear that there are a range of OHS matters that designers of buildings and structures must address. As will be discussed further in Section 8, current building safety legislation, and in particular the *Building Code of Australia*, does not address these matters.

Thus, there is a gap in relation to a number of OHS matters which are not addressed by either building safety or OHS legislation in most jurisdictions. These matters include floor surfaces, roofing surfaces and materials, space for occupants, confined spaces, electrical installations and RCDs, lighting, manual handling considerations, noise control, prevention of falls, storage, traffic control, specific ventilation requirements, materials such as asbestos and synthetic mineral fibres, and requirements for particular work to be performed in the premises.

While the South Australian provisions address some aspects of the safe design of buildings and structures they do not clearly require, for both buildings and structures, that designers must address OHS matters in the construction phase as well as OHS for end use, maintenance, cleaning, servicing and repair. Designers of structures are to address the safety of those involved in erecting the structure but no mention is made of ongoing use. Designers of buildings are to address the safety of those who work in, on or about the building. This does extend to end use, maintenance and repair of the finished building. However, it is less clear, and untested, whether it would extend to the health and safety of those engaged in constructing buildings.

Thus there are some useful safe design examples in existing OHS legislation but these need further development if both aspects of safe design for safe construction, and safe design for safe end use, are to be addressed.

## **8. Regulation of Building Safety in Australia<sup>20</sup>**

### **8.1 The Building Code of Australia and its Administration**

The *Building Code of Australia 1996* (BCA) is produced and maintained by the Australian Building Codes Board (ABCB) and is concerned with safeguarding people from injury, illness or loss of amenity in the use of a building including authorised emergency activities such as rescue operations and fire fighting. It aims to make reasonable provision for access and circulation in the design of a building, taking its use and location into account, and to protect adjoining buildings from structural damage, or damage as the result of a fire in the building.

The BCA has been adopted into building legislation by all states and territories and is administered by the states and territories. This legislation consists of an Act and subordinate legislation which prescribes or "calls up" the BCA. The legislation sets down the technical requirements to be fulfilled in order to gain approval of a building proposal. It empowers regulation of certain aspects of the building process, and contains the administrative provisions necessary to give effect to the legislation. These administrative matters include: plan submission and approval procedures; building permits; inspections during and after construction; provision of evidentiary certificates; issue of certificates of occupancy or compliance; review and enforcement of standards; fees and charges.

### **8.2 Scope and Provisions of the Building Code of Australia**

The BCA contains technical provisions for the design and construction of buildings and other structures, covering such matters as structural safety, fire resistance, access and egress, fire-fighting equipment, mechanical ventilation, lift installations, and certain aspects of health and amenity. The BCA is published in two parts: Volume One is for Class 2 to 9 buildings (commercial buildings) and Volume Two is for Class 1 and 10 buildings (housing provisions).

The BCA allows designers flexibility to select materials, forms of construction and designs that suit a particular building or structure provided that the performance requirements of the BCA are met. The BCA also sets down "deemed to satisfy" provisions. The BCA uses a hierarchy of different types of provisions: objectives; functional statements; performance-outcomes; and building solutions. These are explained below.

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<sup>20</sup> The principal references for Section 8 are the *Building Code of Australia* (Australian Building Code Board, 1996) and *About the Building Code* published online by the Australian Building Code Board.



### **Level 1 - objectives**

Objectives identify the reason for regulating a particular matter. They are expressed in general terms, usually referring to the need to safeguard people and protect adjoining buildings or other property. For example, in regard to occupant space, a relevant objective is "to safeguard the occupants from injury or loss of amenity caused by inadequate height of a room or space."

### **Level 2 - functional statements**

Functional statements state how a building could be expected to satisfy the objectives. An example of a functional statement is "a building is to be constructed to provide height in a room or space suitable for the intended use".

### **Level 3 - performance requirements**

Performance requirements are the core requirements of the BCA. They are mandatory. They outline a suitable level of performance to be met by building materials, components, design factors, and construction methods in order for a building to meet the relevant functional statements and, in turn, the relevant objectives. For example, "a room or space must be of a height that does not unduly interfere with its intended function."

### **Level 4 - building solutions**

Building solutions set out the means of complying with the performance requirements. The BCA provides two methods that can be followed to develop a building solution. *Level 4a* are "deemed-to-satisfy" provisions which include examples of materials, components, design factors, and construction methods which will be deemed to comply with the performance requirements of the BCA. An example of a deemed-to-satisfy provision in the BCA, for the performance requirement above (height that does not unduly interfere with intended function), is "ceiling heights must be not less than 2.4 metres in a habitable room". Through the deemed to satisfy provisions, the BCA still caters for those who prefer specific guidance, or to use traditional building methods.

*Level 4b* methods are the alternative solutions for achieving the relevant performance requirement. Under clause A2.2 of the BCA an approval authority can assess whether a building design, material or method of construction complies with the BCA on the basis of evidence submitted which could be in the form of: (1) a report from a Registered Testing Authority; (2) a current Certificate of Accreditation or Certificate of Conformity; (3) a certificate from a professional engineer; (4) a current certificate issued by a product certification body that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ); (5) a current Scientific Services Laboratory (SSL) Product Listing Data Sheet; and (6) any other form of documentary evidence that adequately demonstrates suitability for use.

Another assessment method is use of a verification method. Verification methods include: (1) calculations using analytical methods or mathematical models; and/or (2)

tests using a technical operation either on site or in a laboratory to directly measure one or more performance criteria of a given solution; or (3) another verification method that satisfies the approval authority, including the use of expert judgement.

The third method of assessment is "comparison to deemed-to-satisfy". In this method a comparison is made between the deemed-to-satisfy solution and the proposed building solution. It must be demonstrated to the approval authority that the building solution complies in an equivalent or superior way to a deemed-to-satisfy provision. It is then deemed to meet the relevant performance requirement.

The Australian Building Code Board emphasises that the mix of performance requirements, deemed to satisfy provisions and assessment methods included in the *Building Code of Australia* provides designers with specific guidance where they require this but permits flexibility for those who want to be more innovative in choice of design and technology, or more selective about construction methods and materials used.

### **Progressive Summary – Regulation of Building Safety in Australia**

The *Building Code of Australia* (BCA) is the principal instrument for regulating the activities of architects, engineers and others involved in the design of buildings and some structures. The BCA covers such matters as structural safety, fire resistance, access and egress, fire-fighting equipment, mechanical ventilation, lift installations, and certain aspects of health and amenity. It is not concerned with OHS for those constructing the building, nor does it deal with a wider range of OHS matters, related to building design, which may affect end users, occupants or those maintaining, cleaning or servicing the building. The BCA has been adopted into building legislation by all states and territories and is administered by the states and territories. Planning approval prior to commencement of the building process is the means by which compliance of the building design with the BCA is determined. Building legislation also provides for inspections during and on completion of buildings.

The BCA allows designers flexibility to select materials, components, forms of construction and designs that suit a particular building or structure. In particular, it does this by a mix of mandatory performance-outcome provisions that established the required level of performance, and building solutions that set out a means of complying with the performance requirements. There are two types of building solutions. "Deemed-to-satisfy" provisions provide examples of materials, components, design factors, and construction methods which are deemed to comply with the performance-outcome requirements. Alternatively, an approval authority can assess whether a building design, material or method of construction complies with the BCA on the basis of documentary evidence such as results of testing, certification from a professional engineer or other accredited body.

As the primary reference point for building designers the BCA is arguably the most logical place to incorporate requirements for safe design, to address OHS in the construction phase and safe design for end users, in relation to matters not yet addressed in the BCA. However, this would involve a change in the scope of the BCA. It would be possible for example to develop for OHS matters, appropriate performance requirements, deemed to satisfy solutions and methods of assessment for alternative solutions. It might also be possible to link into the building approval process, requiring scrutiny of OHS matters at this stage. This is in fact part of the building approval process in some European countries (see Section 9.5.3 below).

The alternative to addressing OHS matters further in the *Building Code of Australia* is to consider options for addressing safe design of buildings, structures and other construction projects under existing Australian OHS statutes. This is the approach taken in Europe and the following section discusses the European arrangements for coordination, design and management of construction projects.

## 9. Regulation of Construction Site Safety in the European Union

### 9.1 Legal Instruments and Administration

In Europe the principal instrument for regulating construction projects in the planning/design phase and in the construction phase, is the *Construction Site Directive*, that is, "Council directive 92/57/EEC of the European Parliament and of the Council of 24 June 1992 on the implementation of minimum safety and health requirements at temporary construction sites" (European Commission, 1992a).

The *Construction Site Directive* cross-references the provisions of the *Framework Directive*, that is, "Council directive 89/654/EEC of the European Parliament and of the Council of 30 November 1989 concerning the minimum safety and health requirements for the workplace" (European Commission, 1989b). There is also a separate directive for construction products, "Council directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the member states relating to construction products" (European Commission, 1989c).

This summary focuses on the *Construction Site Directive*. The Directive is administered by the European Commission in conjunction with the labour or OHS inspectorate in each member state. The Directive has now been transposed into national legislation by all EU member states. It is adopted by amendment to duties in the principal OHS statute, in regulations, ordinances or decrees, depending on the legislative framework of the jurisdiction.

The application of the Directive varies between the member states. This summary canvasses these variations with reference to reviews by Gottfried, Trani and Dias (1999) and the International Social Security Association (2001). Specific information is presented on the UK Construction (Design and Management) Regulations 1994 as it places greater emphasis on the responsibilities of designers. These regulations came into force in March 1995 and were as amended in 2000, to further clarify the duties of designers. The regulations are known as the CDM regulations.<sup>21</sup>

The discussion of the Directive and its implementation by member states focuses on the planning/design phase of the Directive as these requirements are the ones most relevant to upstream duty holders.

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<sup>21</sup> The CDM regulations are the ones relevant to upstream duty holders in the planning/design phase. There are additional regulations that focus on OHS issues on-site in the construction phase. These are the *Construction (Health, Safety and Welfare) Regulations 1996*.

## 9.2 Rationale for the Construction Site Directive

The Directive's stated rationale is that temporary or mobile construction sites are a particularly high risk area of work where unsatisfactory architectural or organisational options, or poor planning at the project preparation stage, contribute to more than half the occupational accidents on construction sites. Poor coordination between multiple contractors in the construction phase is a further factor contributing to accidents (refer Preamble to the Directive). The purpose of the *Construction Site Directive* is to improve health and safety by requiring coordination and cooperation between the different parties involved in construction projects in both the design and construction phases of these projects. In this regard, the *Construction Site Directive* is not primarily concerned with safe design but it does require that design aspects are planned and coordinated, along with other aspects in the planning phase of projects.

The laws of the member states also emphasise the coordination aspect although some give specific duties to designers (Gottfried et al, 1999) (see Section 9.4 'Responsibility' below). For example, the stated purpose of the CDM regulations is to improve health and safety by requiring coordination and transfer of information between the different parties involved in the planning and design of construction projects and to improve attention to OHS in the design process.

## 9.3 Application

The Directive applies to temporary or mobile construction sites which are sites where building and civil engineering works are carried out, including earthworks, construction, assembly and disassembly of prefabricated products, conversion or fitting out, alterations, renovations, repairs, dismantling, demolition, upkeep, maintenance (painting and cleaning) and drainage (see definition in Article 2 and Annex 1 to the Directive). This definition is broad and intended to cover both original construction of a building or structure as well as subsequent work carried out on the structure. Member states have adopted a similarly broad application of the Directive to a wide range of temporary or mobile construction sites where building and civil engineering works are carried out (Gottfried et al, 1999).

In the UK a similarly broad definition of "construction work" is included in the CDM regulations. Construction work includes building, civil engineering or engineering construction work. It extends to construction, alteration, conversion, fitting out, commissioning, renovation, repair, upkeep, redecoration or other maintenance, de-commissioning, demolition or dismantling of a structure. Also included in the definition of construction work are site preparation; assembly or disassembly of prefabricated elements; removal of product or waste resulting from demolition or dismantling; and the installation, commissioning, maintenance, repair or removal of services normally fixed within or to a structure. However, the CDM regulations do not apply to work that is not notifiable and where there will be less than five people in site at any one time, unless the work involves demolition or dismantling of a structure.

## 9.4 Responsibility

In the *Construction Site Directive* responsibility rests with the “client” who is a natural or legal person for whom a project is carried out, or with the “project supervisor” who is a natural or legal person acting on behalf of the client and responsible for the design and/or execution and/or supervision of the execution of a project (Article 2 and 3). Employers and self-employed persons are also responsible during the construction (project execution) phase. A consistent approach to responsibility is adopted in most member states. Berger (1999: 60) presents the rationale for the key role assigned to the client. In regard to the German construction industry he says that:

"The person who was left out was the customer, the client, in whose interest the building activity is started and in whose interest situations may possibly be created which endanger the safety and health of the employees. Through his financial specifications and contract negotiations, the client, however, dictates many conditions for the construction process to which the businesses involved can, in part, only react on a makeshift basis ... the average client has, until now, hardly been interested in safety on the construction site. Through the new obligations imposed by the ordinance on temporary and mobile construction sites, the client, or the person he has instructed, is now also responsible for occupational health and safety protection".

In most member states, designers do not have specific obligations although they do have a role to play (Gottfried et al, 1999). Coordinators appointed by the client are expected to work with designers (and/or they may be the designer in some cases) to facilitate attention to OHS issues in the design. Some countries take this further by designating specific responsibilities on designers. Countries where designers have responsibilities include Sweden, Denmark, Finland, UK and Ireland. For example, in Ireland the designer must take account of general principles of prevention, take account of any safety and health plan of file, cooperate with the project supervisor in the design phase and provide them with information about particular risks (McCabe, 1999: 69).

In addition, in the UK and Ireland another role is specified in legislation. This is the planning supervisor design stage (UK) or project supervisor design stage (Ireland) and this party has specific responsibilities related to the coordination of the different parties and activities involved in the design stage. Table 8 below summarises the responsible parties under the UK CDM regulations.

**Table 8: Key Duty Holders Under the UK Construction (Design and Management) Regulations 1994**

The CDM *Regulations* place duties on several parties who can contribute to the OHS management of construction projects. These parties include clients (including developers and agents appointed by a client to act on their behalf), designers, the planning supervisor and the principal contractor.

The **client** is expected to play a pivotal role in making various appointments of persons who are competent to carry out their role under the CDM Regulations and have allocated resources to perform their functions under the regulations. The client must:

- appoint the planning supervisor and provide information to him/her that is relevant to OHS;
- appoint the principal contractor;
- ensure that a designer, if engaged, is competent;
- ensure that the health and safety plan is prepared; and
- ensure that s/he receives the health and safety file at the end of the project.

The **designer** has legal responsibilities, which include ensuring that the client is aware of his/her duties and ensuring that OHS matters are addressed in the design of the project.

The **planning supervisor** has key responsibilities in regard to project notification; ensuring that OHS matters are addressed in the design; ensuring cooperation between designers; giving advice to the client and contractors to enable them to comply with the regulations; ensuring that the health and safety plan and the file are prepared.

The **principal contractor** is responsible for coordinating OHS matters in the construction phase of the project, including the development of the construction phase health and safety plan and contributing to the health and safety file.

## 9.5 Mandatory Requirements

### 9.5.1 Design and preparation of the construction project

The client or project supervisor must take account of the general prevention principles set down in Directive 89/391/EEC (the *Framework Directive*) during various stages of design and preparation of the project, in particular, when architectural, technical and/or organisational aspects are being decided; in order to plan the various items or stages of work; and when estimating the period of time required to complete work stages (Article 4). The general prevention principles of the *Framework Directive* are essentially system-based or process-style provisions including risk avoidance, risk evaluation and risk control; delegation of responsibility for OHS; recording of injury; provision of information to workers; consultation and participation of workers; training of workers; and health surveillance. They also require provision for first aid, fire-fighting and evacuation.

The situation is similar in the law of the member states in that the client or project supervisor must take account of the general prevention principles set down in Directive 89/391/EEC (the *Framework Directive*) in planning and design of the project (Gottfried et al, 1999). In countries where designers have specific duties they take on some or all of this responsibility in their own right.

For example, in the UK CDM regulations the designer must:

- ensure that the client is aware of his/her duties;
- ensure that any design s/he prepares avoids foreseeable risks to health and safety in construction;
- combat OHS risks at source;
- give priority to measures that protect all persons at work or who may be affected by the work (collective measures) over measures which only protect an individual;
- ensure that the design includes adequate information about any aspect of the project which might affect OHS;
- co-operate with the planning supervisor and any other designer to enable each to comply with statutory provisions.

In the UK the planning supervisor has complementary responsibilities to ensure that the project design addresses the matters required of the designer (as above), and to promote cooperation between designers to enable compliance with the regulations.

The amendment to the CDM regulations in 2000 arose from an ambiguity about the role of designers. The Health and Safety Executive (HSE) sought to ensure that designers would be in no doubt that they have responsibility for OHS in all designs that they prepare directly, as well as designs prepared by their employees or other persons under their control. The amendment addressed a decision of the UK Court of Appeal in *Regina v Paul Wurth SA* [2000] ICR: 860. The HSE had brought legal proceedings against Paul Wurth SA of Luxembourg alleging contravention of the CDM Regulations following a fatal accident. The court concluded that under the previous regulations, designers who arranged for someone else (including an employee) to prepare a design did not have a duty of care.



Neither the *Construction Site Directive* nor the law of member states identifies OHS outcomes to be achieved in the plans and design for the project. This is in contrast to outcomes for the construction phase. Annex IV establishes some performance-based, minimum health and safety requirements for construction. Compliance with these is the responsibility of the employer (Article 9) or self-employed persons (Article 10) engaged during the construction phase. Arguably an opportunity to enhance OHS in the design phase has been missed by linking these more specific OHS matters to the role of the employer and self-employed during construction, and failing to identify specific OHS matters to be addressed by the client, project supervisor or coordinator in the planning and design phase. In this regard, the approach is quite different from the *Machinery Directive* which identifies essential health and safety requirements to be addressed by the relevant upstream duty holder, in that case the manufacturer.

While there is nothing to prevent designers addressing the specific OHS matters in Annex IV, those involved are not required to address these matters. The minimum requirements in Annex IV include: stability and solidity; energy distribution; emergency routes and exits; fire detection and fire fighting; ventilation; exposure to noise, dust and fumes; temperature; lighting; doors and gates; traffic routes; loading bays and ramps; first aid; rest rooms, meal and accommodation areas; falling objects; falls from heights; scaffolding and leaders; lifting devices; excavation and materials handling; demolition; metal or concrete frameworks; and temporary fragility or instability of the structure.

### **9.5.2 Project coordination**

The Directive requires that the client or the project supervisor appoint one or more coordinators for OHS matters for any construction site with more than one contractor present (Article 3). The project coordinators apply the “general prevention principles” (the *Framework Directive*), draw up “safety and health plans” for the construction site including specific measures for high risk work, and prepare the “safety and health file” (Article 5). (The plan and file are discussed further in Section 9.5.3 'Documentation').

Most member states have adopted this approach requiring that a person be appointed to coordinate OHS matters in the project preparation/design phase, as well as during the construction/execution phase (Gottfried et al, 1999; International Social Security Association, 2001). However, this is not the case in Denmark, which only requires a coordinator in the construction phase of the project.

In most member states the coordinator in the planning/design phase takes on the role of preparing the pre-tender “safety and health plan” and the “safety and health file” but does not have legal duties. S/he must call on the client to impose direction if it is required. For example, in the German context, Berger (1999: 57) describes the role as being to “...act as adviser and mediator, like a special expert, to the architects and professional engineers, so that recognisable impairments of occupational safety and health protection in the building process can be recognised and eliminated in advance.”

In contrast, in the UK and Ireland the position of planning (project) supervisor is responsible for coordination of OHS matters in the planning/design stage and has specific legal responsibilities. Under the CDM regulations the client appoints a planning supervisor (who is competent and adequately resourced to fulfil their OHS responsibilities). This person coordinates the health and safety aspects of the design. The specific responsibilities of the planning supervisor are to ensure that:

- the pre-tender health and safety plan is prepared and included in tender documents;
- the health and safety file is prepared and handed over to the client at the end of the project;
- the HSE is notified of the project;
- there is cooperation between designers so that OHS aspects are properly considered and coordinated, the way the different aspects of the design interact is addressed and information is passed between them;
- designers comply with their OHS duties and take proper account of OHS in their design, including how they have assessed risks and tried to eliminate them;
- advice is provided to the client when requested, for example on the competence of the designer, contractor and their resourcing.

An important area of difference in the law of member states is the extent to which there are requirements for training and qualifications of the coordinators of OHS matters (in either the design or the construction phases). Zachmann (1999: 4) outlines three approaches:

- the national authorities do not regulate training and qualification and courses are offered by private providers (UK, Ireland, Netherlands, Denmark, Portugal and Sweden);
- the national authorities establish a framework for training and qualification (for example core course content and duration are specified) but delivery is by private providers (Germany, Austria and Portugal);
- education, training and qualification are regulated (Luxembourg, France, Belgium and Greece).

For example, Belgian law establishes three levels of training (Lorent, 1999: 14). The basic level involves 60 hours of training; level 2 involves 210 hours of training and is for specialists and project execution coordinators. These people must also have between one to five years experience according to the type of site. Those involved in project preparation require further training at Level 1, which involves 410 hours for specialists and project preparation coordinators and an additional requirement for experience of one to five years according to the type of site. There is also a procedure for control of competencies of coordinators by examination. In France there are three

levels of training with level 1 involving 15 days, level 2 involving 10 days and level 3 involving 3 days and a further 2 days (International Social Security Association, 2001). In Greece, the coordinator in either the design/planning phase or the construction phase must be a graduate engineer.

In contrast, the UK CDM regulations require that the planning supervisor be “competent” and have adequate resources to carry out their responsibilities, but they do not prescribe any specific qualifications or training for the planning supervisor. The role is often carried out by an architectural practice, consulting engineers, project managers or contractors with design and construction experience.

### **9.5.3 Documentation**

#### **Safety and health plan**

The Directive requires that the client or project supervisor ensure that prior to setting up the construction site a safety and health plan (OHS plan) is drawn up (by the planning/design phase project coordinator) (Article 3). Derogations from the requirement to produce an OHS plan may be allowed but not for work involving particular risks which includes: earth falls; engulfment in swampland; falling from a height; chemical or biological hazards; ionizing radiation; work near high voltage power lines; risk of drowning; wells underground earthworks and tunnels; divers using air supply system; workers in caissons with compressed air supply; use of explosives; assembly or dismantling of heavy, prefabricated components.

The law of most member states similarly requires that the client or project supervisor ensure that, prior to setting up the construction site, an OHS plan is drawn up. In practice this is done by the planning phase, project coordinator). In the UK and Ireland the specific appointment, the planning (project) supervisor design stage is responsible for developing the plan (Gottfried et al, 1999; International Social Security Association, 2001).

Some countries prescribe the contents of the OHS plan but others do not. In some countries, government or industry bodies provide guidance on the contents of the plan. An example of a country where the contents of the plan are set out in regulation is Ireland. The plan must include the general description of the project, the name of the project supervisor design stage (PSDS), the project duration and phasing of work, particular risks (as in the Annex to the Directive), activities on the site, requirements of the client and PSDS, existing drawings and safety file, existing environment, liaison and communications with the project supervisor construction phase, and arrangements with providing information for the safety file (McCabe, 1999: 77).

The UK CDM regulations require the planning supervisor (design stage) to ensure that an OHS plan is drawn up in sufficient time to be provided to any contractor before arrangements are made for the contractor to carry out or manage construction work. The contents of the plan are prescribed and must include: a general description of the construction work; details of the time for completion of the project, and any intermediate stages; details of known or reasonably foreseeable risks to the health or safety of any person carrying out the construction work; any other information which the planning supervisor knows or could ascertain by making reasonable enquiries,

which is necessary for any contractor to have in order to demonstrate competence, allocation of adequate resources and comply with requirements.

In Finland the content is not prescribed and the plan, although required, does not have to be a separate OHS plan. It may be integrated in the total project plan covering procurement, budgeting and other matters (Lakka and Sauni, 1999: 46).

In at least two countries, Greece and Spain, the OHS plan must be submitted with plans in order to obtain the approval of the building authorities for the project (Papaioannu, 1999: 65; Casals, Etxeberria and Salgado, 1999: 128).

### **Safety and health file**

According to the Directive the coordinator draws up a safety and health file (OHS file) on the characteristics of the project (Article 5). The file is to contain relevant health and safety information to be taken into account during subsequent works (for example maintenance, repair and renovation of the structure). The file is initiated by the project coordinator in the planning phase and added to by the project coordinator and contractors involved in the construction phase.

Similarly, in the law of most member states the client or project supervisor must ensure that an OHS file is prepared about the characteristics of the project, containing relevant OHS information to be taken into account during subsequent works (Gottfried et al, 1999). It is usually the role of the coordinator in the planning and design stage to initiate the file, which is added to by the coordinator and contractors involved in the construction phase. In addition to maintenance and repair, at least one country (Denmark) emphasises the need to address OHS issues for the end user (Hellidi, 1999: 38).

The contents of the OHS file are prescribed in some member states. Some provide guidance on the contents of the file, through government or industry bodies. In Germany, the *Berufsgenossenschaften*<sup>22</sup> for the construction industry sets down the contents of the file (Berger, 1999: 56). In Finland, the content of the safety and health file is quite detailed according to Lakka and Sauni (1999: 47). It must address: general work safety instructions and regulations; hazardous substances and materials; occupational hygiene; stressors at work; dangerous works and work phases; hazards of the work environment; hazardous conditions; hazards and limitations related to use of machinery and equipment; hazards, impediments and constraints to work arising from traffic and other nearby activities; equipment, structures and other things that may constitute a hazard; other problems and hazards characteristic of the project.

Under the UK CDM regulations the planning supervisor ensures that an OHS file is prepared about the characteristics of the project. The designer(s) and contractors involved in the construction phase add to the file throughout the project. Regulation 14 outlines in very general terms what is included in the file. Essentially the file is to contain information which tells the client and others who might be responsible for the structure in the future about the key health and safety risks that will need to be managed during future maintenance, repair or construction work.

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<sup>22</sup> The industry based, workers compensation authority.

In its *Information Sheet - Construction Sheet no 44* the Health and Safety Executive (HSE, undated) advises that the file might include design criteria, construction methods and materials used, details of services, plant and equipment, "as built" and "as installed" drawings, operation and maintenance manuals (with maintenance facilities and procedures for the structure). Further the HSE advises that the client should keep the file available for planning supervisors and contractors in the event of future work on the structure.

#### **9.5.4 Notification of construction work**

The Directive requires that the client or the project supervisor give prior notice of the project to the competent authority (Article 3). Notice is required for work scheduled to last longer than 30 working days and involving more than 20 workers simultaneously, or where the volume of work is scheduled to exceed 500 person days. Notice must be given "before work starts" on the construction phase.

In the member states there is a similar requirement for notice to be given if construction work will last longer than a prescribed time and involve more than a specified number of workers (Gottfried et al, 1999). However, the timing of notification varies in the member states. In some instances the timing of notification is not sufficiently in advance of the construction phase to alert the relevant authority during the planning/design process. For example, in Finland notice must be given as soon as possible but no later than two weeks after construction work begins (Lakki and Sauni, 1999: 46). In Germany, notice is required not more than two weeks before the construction site is established.

In the UK, the CDM regulations establish that the planning supervisor must ensure that notice of the project is given "as soon as practicable" after the appointment of the planning supervisor. Provided the planning supervisor is appointed early in the planning phase the HSE is informed of the project during planning and design. However, if the appointment is made later, this may not be the case. Notification is required if the construction phase will be longer than 30 days or will involve more than 500 person days of construction work.

In the member states, notification is generally only given just prior to commencement of construction works on site (or even after construction work has started) (Gottfried et al, 1999). Consequently, there is little opportunity for regulatory authorities to intervene to address weaknesses in the planning phase, except after the event. Given the timing of notification, the inspectorate in most member states would require an alternative way of finding out about construction projects in the planning phase. Sweden uses a subscription list of new construction projects to find out about new developments while they are still in the planning and design phase (International Social Security Association, 2001: 155).

## **9.6 Qualification of Obligations**

The requirements of the Directive are absolute other than where derogations are permitted. For example, an OHS plan may not be required for construction work that is not high risk; or notification is not required for short-term projects involving few workers. In addition, in drafting of legislation by member states the duties may be qualified, according to the legal framework in the member state.

For example, in UK and Ireland, the duties are qualified by the expression “reasonably practicable”. There is a need to address known as well as foreseeable risks to health and safety. For the designer this means addressing OHS matters to the extent that it is reasonable to expect the designer to address them at the time the design is prepared.

## **9.7 Evidentiary Standards**

The Directive is not supported by evidentiary standards although some member states have developed additional instruments. For example, the Construction (Design and Management) Regulations in the UK are supported by the Approved Code of Practice on Managing Construction for Health and Safety 2000. This provides guidance on the regulations and emphasises the management of OHS throughout the life of a project, clarifying the responsibilities of the different parties.

In general, there is a lack of direction given about specific OHS outcomes to be achieved, such as designing to eliminate or control specific hazards that arise in construction or in the ongoing maintenance and repair of buildings and structures. The focus of the Directive and of the law in the member states is on the coordination and management of projects rather than specific OHS factors to be addressed in the design.

## **9.8 Enforcement**

The OHS or labour inspectorates enforce the legislation in each member state. The extent of enforcement varies and prosecutions are rare (other than in the UK) and have focused on the construction phase of projects rather than the planning/design phase (International Social Security Association, 2001: 152). Penalties in Euros vary quite widely. Upper level fines are in the range 10,000 to 600,000 Euro and some countries have the possibility of a prison sentence (International Social Security Association, 2001; Health and Safety Executive, 2001: 6).

Sweden is unusual in involving the police in enforcement. According to Önsten and Patay (1999: 138) if an OHS plan, file or notice is missing this can be reported to the police and the responsible person can be fined without legal proceedings. For this reason the legislative requirements for these documents must be clear and unambiguous and an exhaustive list of risks is prescribed. Matters not addressed in legislation cannot be required. These authors cite the example of ergonomics, which is not prescribed as a matter to be addressed in the plan or file, and consequently cannot be required.

The HSE enforces the CDM regulations using a combination of improvement and prohibition notices, and prosecution. Reported enforcement activity under the CDM regulations in 2000/2001 (Health and Safety Executive, 2001: 6) involved:

- 220 enforcement notices, about half being prohibition notices and the other half being improvement notices;
- 32 successful prosecutions with an average fine of £6050.

In this report of its enforcement activity the HSE notes that working with clients and designers requires more time than addressing immediate issues on a construction site (Health and Safety Executive, 2001: 7). As a comparison, in the year 2000/2001 there was much greater enforcement activity in relation to the *Construction (Health, Safety and Welfare) Regulations* with almost 2,893 enforcement notices, mostly prohibition notices, and successful prosecutions for 161 serious breaches of the legislation.

### **Progressive Summary - the European Union's *Construction Site Directive***

In the European Union, the *Construction Site Directive* has now been transposed into national legislation by all member states. The Directive is concerned with improving planning and coordination in the planning/design and the construction phases of building and civil engineering construction projects, including original construction as well as subsequent work carried out on the structure.

The “client” (the person for whom a project is carried out) or the “project supervisor” (a person acting on behalf of the client) has primary responsibility. Employers and self-employed persons are also responsible during the construction (project execution) phase. In most member states, designers do not have specific obligations although they do have a role to play. Coordinators appointed by the client are expected to work with designers to facilitate attention to OHS issues in the design phase. Some countries take this further by designating specific responsibilities for designers, as is the case in Sweden, Denmark, Finland, UK and Ireland. In addition, in the UK the planning or project supervisor has designated responsibilities related to the coordination of the different parties and activities involved in the design/planning phase.

During the design/planning of the project the client or project supervisor must take account of the general OHS management (“prevention principles”) set down in the European Union's *Framework Directive*. Neither the *Construction Site Directive* nor the law of member states identifies OHS outcomes to be achieved in the plans and design for a project. Specific OHS matters to be addressed by upstream parties are not defined, as they are in the *Machinery Directive*. Rather, the key requirements are the development of a “safety and health plan” and a “safety and health file”. Some countries prescribe the contents of the OHS plan but others do not. In most member states the coordinator of OHS in the planning/design prepares these but the client is responsible for ensuring this is done. However, in the UK and Ireland the planning (project) supervisor is responsible for preparation of the plan and the file. Training of OHS coordinators is only required in the law of a few member states.

Construction projects must be notified to the relevant competent authority but notification is generally only given just prior to commencement of construction work on a site (or even after construction work has started). Consequently, there is little opportunity for regulatory authorities to identify weaknesses in the planning/design phase, except after the event. Given the timing of notification, the inspectorate in most member states would require an alternative way of finding out about construction projects in the planning phase, such as notification prior to planning approvals.

The OHS or labour inspectorates enforce the legislation in each member state. The extent of enforcement varies and prosecutions are rare (other than in the UK), and have focused on the construction phase of projects rather than the planning/design phase.



## 9.9 The Impact of the *Construction Site Directive*

### 9.9.1 Incident trends and perceptions

The *Construction Site Directive* is underpinned by a concern that although injury, illness or death in the construction industry arises from work on construction sites, some of the factors contributing to these adverse outcomes arise in the planning and design of construction projects. For example, Lorent (1999:8) suggests that:

“Although most accidents occur on site, the root cause of two-thirds of them lies in an event prior to commencement of the works on site, such as a design error, bad choice of work equipment, or poor organization of the site and contractors involved. The simultaneous or consecutive performance of activities by different contractors is a particularly frequent cause of accidents.”

The *Construction Site Directive* evolved from an earlier International Labour Organisation (ILO) code of practice, *Safety and Health in Construction* (International Labour Organisation, 1992). Amongst other duties, this code recommends general duties for designers, engineers and architects, suggesting that they need to exercise care “not to include anything in the design which would necessitate the use of dangerous structural or other procedures or materials hazardous to health or safety which could be avoided by design modifications or by substitute materials” (International Labour Organisation, 1992: clause 2.6.2). Moreover, those involved in design of construction projects should receive OHS training.

However, the safe design principles of the ILO code of practice are not fully reflected in the *Construction Site Directive* and the laws of member states. Rather the European laws have emphasised the role of the client, the coordination of different parties involved in project planning, the development of documentation (safety and health plans and files) and notification of construction projects. Architects, engineers and others involved in design of the construction project have a role to play but the OHS problems they are to address and the OHS outcomes to be achieved at the design stage are not defined. A few countries establish mandatory OHS training and qualifications for coordinators, and a few set down what is to be contained in OHS plans and OHS file. The timing of the mandatory project notification may enable enforcement of construction work but is often too late for the competent authorities to be aware of projects during the design phase. Arguably those involved in the planning and design phase of construction projects are required to implement a framework of coordination and documentation arrangements but with minimal direction about how to do this.

It is perhaps then not surprising that the evidence of the impact of the *Construction Site Directive* and associated law is at best equivocal. Few member states claim a downward trend in national construction incident frequency rates since introducing law based on the *Construction Site Directive*. The Netherlands claims a downward trend in the number of accidents; coincident with an increase in the number of workers engaged in construction over the same period (hence a downward trend in the incident rate). Also, the total number of absent days, days spent in a hospital and number of severe accidents is slowly decreasing (Schaeffer and Munck, 1999: 101). Sweden experienced a downward trend in the incident rate in the construction

industry but as this coincides with a downward trend in the workforce overall it is not be attributed to the *Construction Directive* alone (Önsten and Patay, 1999: 135). Finland also experienced a downward trend in the incidence rate from 105 per million hours worked in 1990 to around 80 in 1997. However, it is unclear if this is specific to activity in the construction industry as manufacturing and transport experienced a similar reduction. Also, in the same period construction fatalities initially dropped from 0.095 down to 0.03 and then started to rise again (Lakka and Sauni, 1999: 41-43).

In the United Kingdom the incident rate trends were similarly initially positive with a downward trend from 1993/94 to 1997/98 of 10% (but with fluctuations up and down during that period, Caldwell, 1999: 142; Entec, 2000: v). There was a marked upturn in fatalities of 60% in the year 2000 (Bomel, 2001: 0.5). A contract research report commissioned by the Health and Safety Executive (Entec, 2000) analysed incident reports made under RIDDOR (the reporting regulations). It was found that the fatalities rate in scaffolding (1 in 5,400), in roofing (1 in 3,800) and in steel erectors (1 in 3,000) exceeds the HSE's own guideline of an intolerable risk (1 in 10,000).

Incident rate data for other member states reported in Gottfried et al's (1999) review of implementation of the *Construction Site Directive* suggested that it was too early to tell if the new laws were impacting on incident and fatality rates.

Notwithstanding the equivocal evidence of incident rates, there are some general perceptions of benefits related to increasing awareness of clients, designers and others involved in coordinating the planning phase of construction projects. For example, more people involved in the industry are aware of OHS, the role of the client and others in OHS, and the OHS plan (Caldwell, 1999: 146; Entec, 2000: 66; Gottfried, 1999: 96; McCabe, 1999: 81; Önsten and Patay 139). Other reported benefits include:

- increasing attention to pre-planning of construction site safety by clients and designers (Lakka and Sauni, 1999: 48) and use of the OHS plan as a risk assessment tool (Lorent, 1999: 18-19);
- dissemination and transfer of information between the parties and greater emphasis on consultation (Lorent, 1999: 18; Schaeffer and Munck (1999: 108);
- greater awareness of the design team of the OHS aspects of architectural, structural and product choices for construction safety, and elimination of some hazards and reduction of others in the design process (Caldwell, 1999: 146; Lorent, 1999: 18-19);
- designers and architects receiving information sooner in the procurement process enabling more attention to OHS in designs (Caldwell, 1999: 146);
- coordinator assessing foreseeable risks, settling disputes and encouraging a project culture with the aim of creating a safety culture (Lorent, 1999: 18-19);
- reduced scheduling problems and risks arising from two or more activities conducted at the same time by organising activities at different times and/or in separate areas (Lorent, 1999: 18-19);
- greater potential to plan OHS training for workers when risks are recognised in advance (Lorent, 1999: 23) and an increase in the amount of OHS training undertaken (McCabe, 1999: 81); and
- selection of more economical construction methods, application of collective safety precautions, and cost-optimised handling of materials and waste (Berger, 1999:60).

However, there is considerable variation in industry practice (Lakka and Sauni, 1999: 48) and it is considered that more problems are experienced on smaller projects that lack understanding of the requirements and consequently are not applying the law adequately (Papaioannu, 1999: 66; Schaeffer and Munck, 1999: 108). Smaller enterprises are concerned about the growing amount of paperwork (McCabe, 1999: 81). In this regard it is pertinent to consider the characteristics of the construction industry. Summary statistics from the UK are revealing. In that country 94% of construction companies have seven or less employees. Of the 1,774,000 workers in the UK construction industry in 2000/01, 40% were self-employed (Health and Safety Executive, 2000:68). Such characteristics are typical of the construction industry. Moreover data on injury patterns suggests that workers on smaller sites are more at risk. Falls from height are a principal cause of fatalities in the industry. The majority of fatal falls from heights occur on small sites and within small companies (Bomel, 2001: 0.7).

It would not be surprising if an industry in which smaller organisations are prevalent were experiencing some difficulties with a regulatory regime that leaves much to the duty holder to determine how to comply. Some reported examples of problems experienced are a tendency for documentation (OHS plans and files) to be generic and not relevant to the particular project under consideration (Caldwell, 1999: 147; Entec, 2000: 30; and see also Johnstone, 1999 for similar findings in relation to OHS plans in the Australian construction industry). The generic character of some plans may extend to photocopying typical OHS plans so as to have one to show to the inspection body, rather than developing them specifically for the project (Dias, 1999: 119). On the other hand, there is a perception that some plans are unnecessarily long (to safeguard the compiler) and essential information is obscured by irrelevant material (Baxendale and Jones, 2000: 38; Caldwell, 1999: 147). Even where procedures and documentation have improved, implementation on site remains a major issue (Entec, 2000: 30). The UK requirement for coordinators and others to be competent has proved difficult to assess in the absence of specific criteria for determining competency (Caldwell, 1999: 147; Entec, 2000). There is a common practice to use a questionnaire to determine competence rather than making “reasonable enquiries” to check that practice matches claims and suitability for the complexity of the project (Baxendale and Jones, 2000: 37-38)

### **9.9.2 Some research and evaluation**

Further insights are provided by the Entec (2000) research, commissioned by the Health and Safety Executive and the Institution of Civil Engineers to evaluate the impact of the CDM regulations on OHS performance in the UK construction industry. This research included interviews with 89 participants from a cross-section of parties in the construction industry (clients, designers, contractors, planning supervisors, insurers and trade associations from different sized organisations and projects). Interviews indicated a number of implementation problems but key amongst these are concerns about the definitions of roles and the failure in practice to fulfil the expectations of the regulations, especially in regard to the role of the client and the designers of construction projects.

The CDM regulations (and the *Construction Directive*) envisage that the client will drive attention to OHS but some research suggests that they “are often ignorant of their role and are detached from their projects” (Entec 2000, viii, 36 and 63). One-off clients are considered to have a particularly poor understanding and clients in general rely on other groups including agents, designers and planning supervisors to advise them of their duties, rather than leading and resourcing attention to OHS as CDM requires. Rather than the client appointing a planning supervisor promptly to coordinate OHS aspects of design and planning, it is more common for a client, unaware of his/her responsibilities, to appoint a designer and progress to the design of the project. Appointment of the planning supervisor may then occur rather late in the process. This practice is also reported by Baxendale and Jones (2000: 37-38) who found that one-off clients in particular tend to appoint the designer and seek advice from them on the appointment of the planning supervisor. As a result the design may be in an advanced stage before this appointment occurs and there is less opportunity to impact on the health and safety aspects of the design and the OHS plan.

Designers also have an important role under the CDM regulations but most designers do not give OHS a high enough priority and there has been little improvement in producing designs that are safe to construct (Entec, 2000: 37). Designers have been slow to respond to the need for risk assessment and the subsequent requirement to pass this information on to the planning supervisor (Baxendale and Jones, 2000: 37-38). Some of the reasons for the failure to address OHS effectively in the design phase (provided by designers as well as others in the construction industry in the Entec study) are: designers have limited understanding and experience of buildability issues and other on site OHS issues; the differences in risks for different trades are not well understood; and OHS issues over the life time of a building are not well understood. Moreover, design risk assessments are often undertaken when the design is nearly complete and unlikely to be changed. In part this may be due to the late appointment of the planning supervisor whose role is to ensure attention to OHS requirements in the design and planning phase. If they are appointed at a late stage in the project they are unable to provide adequate OHS input to the design phase (Entec, 2000: 41, 70-71).

There is also concern that enforcement of the CDM regulations is not providing a sufficient deterrent for non-compliance. The inspectorate confronts a practical problem that it may receive insufficient notification of projects. The Entec report (2000: 41) draws attention to a requirement of the UK *Asbestos at Work Regulations* which set a 28 day period following notification of work before starting asbestos removal, in order to allow time for plans to be fully developed and assessed. It is suggested that a similar approach be taken to notification of construction projects.

While participants in the Entec study identified the CDM regulations as the biggest external influence on the industry, the low level of enforcement visits and prosecutions were identified as failing to provide sufficient deterrent for poor health and safety performance.

"Many comments were made about the low number of inspections and prosecutions by HSE and hence the low probability that an organisation will be caught doing something illegal unless there is an incident to prompt inspection. A visit by an HSE inspector brings about improvements in health and safety... In

addition, fines vary widely with some large companies fined small amounts that appear negligible and interviewees consider these will do nothing to deter the recurrence of the activity, whereas small companies receiving the same fine may be put out of business. Interviewees feel that a fine equivalent to 10% of profits would act as a significant deterrent to all firms." (Entec, 2000: 60)

Nonetheless, the Health and Safety Executive's data suggests that enforcement does occur with 32 successful prosecutions and 220 enforcement notices involving the upstream duty holders in 2000/2001 (Health and Safety Executive, 2001: 6). (See also Section 9.8). It is possible that the perception of limited enforcement is exacerbated by the very large number of contractors in the industry (163,000 according to the HSE, 2001: 4).

With OHS legislative interventions it is always difficult to determine to what extent the intervention influences change, in view of a wide range of other factors that may influence the decisions and actions of the regulated group. If improvements in performance are discerned, can they be attributed to the legislation? If improvements are not apparent, is this due to non-compliance with legislation that is sound in its capacity to deliver improved OHS outcomes, if it is implemented? Or, is legislation flawed in the sense that even if complied with, it would not achieve improved OHS outcomes. With the *Construction Site Directive* and associated law of member states there is cause for concern that the legislation may be inappropriate for the target group (or at least for a significant proportion of it) and that for those who do endeavour to comply, they may be hampered by a lack of know how and direction about the OHS outcomes to be achieved, and effort may go into the generation of plans and files, which may not translate into the prevention of injuries, disease and death.

### **9.9.3 Some Australian experience**

To date, no Australian jurisdiction has implemented OHS requirements similar to the European duties on clients, project managers and designers of construction projects. However, in 1998 in NSW a *Construction Memorandum of Understanding* (MOU) was signed between the NSW Government and 17 major contractors in the construction industry with the aim of encouraging cooperation and collective responsibility in the management of OHS risks (WorkCover NSW, 2001b). The MOU prescribed performance indicators to be met by signatory contractors, over a two-year period, in the areas of subcontractor management, line management training, and safety in design and workplace consultation. In regard to safe design, participants were provided with the *CHAIR Safety in Design Tool* (Construction Hazard Assessment Implication Review). This tool is designed to assist those involved in design of construction projects to reduce construction, maintenance, repair and demolition safety risks associated with design. Under the terms of the MOU signatory contractors undertook to include OHS aspects in their tender specifications when engaging design consultants.

In March 2001, WorkCover NSW surveyed signatory contractors. Fourteen responded to the survey. Thirteen undertook design and construct work and of these seven indicated that their contract conditions require a review of design and its OHS implications. Only six indicated that they assess safe design for major elements of a project, and only two indicated that they assess safe design for the whole project

(WorkCover NSW, 2001b: 52). Seven had used the *CHAIR Safety in Design* tool and gave it an average response on usefulness of 6.1 (a median response is not provided).

WorkCover NSW contracted the Australian Centre for Industrial Relations Research and Training (ACIRRT) to conduct interviews with stakeholders either from, or contracted to, the 17 signatories to the MOU (in total 38 face-to-face and 6 telephone interviews). A number of observations were made in interviews many of which concern on-site OHS matters. Insights relevant to the planning/design phase are the observation that programming of projects by contractors is unrealistic and that there is too much focus on paperwork at the expense of enforcing OHS compliance (WorkCover NSW, 2001b: 94-95).

Amongst its conclusions about future directions WorkCover NSW (2001b: 102) identifies various barriers to improved OHS performance in the construction industry. These include the fact that design is generally not systematically addressed by clients, the design profession and principal contractors; and the fact that poor programming practices and unrealistic timeframes contribute to unsafe working environments.

#### **9.9.4 Training for OHS coordinators**

An aspect of the European *Construction Site Directive* that has received special attention is the training and competency requirements of those charged with the responsibility for coordinating health and safety matters, in both the planning/design phases and the construction phase. In Gottfried et al's (1999) report on the implementation of the *Construction Site Directive* in Europe, a number of commentators from the member states advocate mandatory training of OHS coordinators and project supervisors. The Directive does not require such training although several member states have made it a requirement in their law. Proponents argue that competency criteria should be consistently defined in law of member states to enable mutual recognition of training programs and qualifications (Lorent, 1999: 23; Hellidi, 1999: 27; McCabe, 1999: 81; Gottfried, 1999: 97; Dias, 1999: 119; Önsten and Patay, 1999: 136).

Lorent (1999: 23-24) recommends that training should cover three aspects:

1. **knowledge** of OHS regulations, OHS in public contracts, planning methods, construction risks, site organisation, maintenance of the structure, management of activities in the vicinity of the construction site;
2. **capacity** to read a plan and assess risks involved; understand contract specifications and assess risks involved; understand a tender and assess risks involved; assess risks involved in maintenance and use of the structure; formulate proposals to avoid, reduce or combat risks at the source; establish a health and safety plan and file; organise the layout of the site; ensure maintenance of the site, equipment and facilities; coordinate the activities of various contractors; cooperate and exchange information between the parties;
3. **communication skills** to conduct information exchange; present measures required; negotiate and convince others; choose and disseminate the relevant information; utilise participative structures; persuade the client to impose the necessary measures.

### 9.9.5 Information for designers

Despite the best efforts of regulators to have OHS addressed in the planning/design phase there appears to be a resistance to do so, even in a closely monitored process with major contractors, as was the case with the NSW MOU participants. Perhaps the observations of another UK study are relevant here. Bomel (2001) sought to draw out key influences on particular types of contributors to “accidents”, as rated by a group of industry participants. They note that:

“... a repeated theme has been the role of designers and designers themselves acknowledge that more could be done to eliminate hazards. Whilst considerable blame is heaped on designers, it is recommended that work be done to understand the challenges they face in terms of process and timing, and in terms of their knowledge and experience. Rather than an unwillingness to address safety, it is contended that there may be an inability to design for safe construction effectively.”

They suggest that the issues need to be defined more clearly to determine how best to encourage improvement. The observation of Baxendale and Jones (2000: 38) may also be relevant. They note that designs for construction projects are judged in terms of fitness for purpose, aesthetics and buildability. Thus there is a challenge facing designers to seek out and find other construction methods that give the same or similar results than a more inherently high risk option.

Is there an inability to design to address OHS aspects that is contributed to by characteristics and priorities of the design process? By issues of timing, process, knowledge and experience, or a lack of (or lack of awareness of) designs, methods and materials that achieve the objectives of fitness for purpose, aesthetics and buildability along with OHS criteria? Is there then a need to determine more clearly how to achieve improvements in this area before embarking upon regulation?

Limited understanding and experience of why and how to address OHS problems in the design phase of construction projects are a recurring theme. Gambatese and Hinze (1999: 644-666) argue that designers play a crucial role in influencing construction worker safety because the design dictates how a particular project or its components will be assembled. However, designers have not been cognisant of their influence and have not acknowledged the importance or relevance of their role in safety, possibly resulting from a lack of formal education about construction worker safety and their minimal involvement in overseeing worksite safety.

Gambatese and Hinze (1999: 643) recommend that the designers' argument that they lack the knowledge to address OHS aspects in the design process needs to be met by demonstrating the possibilities for improving construction site safety in the design of buildings and structures, by accumulating suggestions for doing so. They report on the development of a database of design solutions to construction phase OHS problems. These solutions were developed from construction industry literature and personnel, drawing on published academic and industry work; OSHA publications and data; in-person and telephone interviews with construction industry personnel; development of design suggestions to address typical hazards identified in worker safety manuals,

safety design manuals and checklists; and techniques used for enhancing end-user safety. More than 400 design suggestions have been accumulated involving the design disciplines concerned with structural and architectural features, piping/plumbing, mechanical aspects, electrical/instrumentation, transportation and construction management.

Matters within the domain of structural engineers for which there may be design solutions include foundations, structural framing, floors, roofs, stairs, ladders, ramps, walkways and platforms. Matters in the domain of architects include furnishings, finishes, project layout, structure plan/elevation, doors, windows, handrails, guardrails and the work schedule/sequence. Many of the solutions address principal sources of occupational injury on construction sites including falls, electric shock, cave-ins, explosions, fire, toxic substances, climate/environment, vehicular traffic, struck by objects, heavy equipment, confined spaces, caught in or between objects, and lighting hazards.

Table 9 presents some of the design solutions identified by Gambatese and Hinze (1999) together with others identified by Lorent (1999: 19) and Berger (1999: 60). The examples help to illustrate how a general duty to ensure safe design can translate into practical action by defining OHS outcomes to be achieved.



**Table 9: Examples of Design Solutions for Safe Construction**  
**(Derived from Gambatese and Hinze, 1999: 647-648 and Gottfried et al, 1999)**

Provide adequate clearance between the structure and overhead power lines by burying, disconnecting or re-routing cables before construction begins, to avoid the hazard when operating cranes and other tall equipment.
Design components to facilitate pre-fabrication in the shop or on the ground so they are erected in place as complete assemblies, reducing worker exposures to falls from heights or being struck by falling objects.
Assemble and finish components off-site to minimise noisy machinery such as pneumatic drills, circular saws and sanders.
Choose blocks and panels that are easy to handle.
Design parapets to a height that complies with guardrail requirements, eliminating the need to construct guardrails during construction and future roof maintenance.
Design beam-to-column double connections to have continual support for beams during the connection process by adding a beam seat, extra bolt hole, or other redundant connection point, that provides continual support for beams during erection - to eliminate falls due to unexpected vibrations, mis-alignment and unexpected construction loads.
Design and schedule a permanent stairway constructed at the beginning of construction to help prevent falls and other hazards associated with temporary stairs and scaffolding.
Cover passages, entrances and exits well designed for construction work and future use.
Design maintenance operations to be done from ground level or from the structure, for example window cleaning bays or gangways integrated into the structural frame.
Design and position anchorage and hoisting points.
Avoid fragile roofing materials.
Replace conventional ceiling recesses with porous concrete blocks (as filling material) that can be drilled as required and avoid the risk of stumbling.

### **Progressive Summary –Construction Safety Experience from Europe**

There has been considerable interest in the European Union's regulatory model for managing OHS in construction projects. It is the first of its kind in attempting to improve OHS in construction work by improved planning and attention to OHS in the design of these projects. However, the evidence so far is at best equivocal. Few member states claim a downward trend in national construction incident frequency rates since introducing law based on the *Construction Site Directive*, and even in these countries other influences are believed to have contributed to or determined the downward trend. Nonetheless, benefits are perceived from this law, including: greater awareness of OHS responsibilities across a wider range of parties in the construction industry; dissemination and transfer of information between the parties; reduced scheduling problems and risks arising from two or more activities conducted at the same time.

The characteristics of the construction industry may be an important factor in understanding the response to regulation, with a high proportion of construction companies being very small enterprises and many workers being self-employed. There are grounds to consider whether a regulatory regime based on coordination, the development of OHS plans and other documentation is the appropriate approach for an industry in which small business is predominant.

Some specific problems are identified. There is a tendency for OHS plans and files to be generic and not relevant to particular projects and there is often a failure to implement OHS plans on site. The emphasis on the role of the client is problematic as clients (especially one-off clients) often have a poor understanding of their role. Many designers do not give OHS a high priority that is in part attributed to designers having limited understanding and experience of how to design for safe construction. Late notification of the inspectorate of construction projects often precludes timely involvement of inspectors during the planning/design phase. The lack of training of those coordinating OHS in construction projects is identified as a weakness. Mandatory OHS training has been proposed, structured to develop the competencies of coordinators in regard to OHS, planning and organisation of construction projects.

There is also concern that the challenges faced by designers of construction projects are not fully understood, in terms of the process and timing of planning and design, and in terms of their knowledge and experience. In particular, designs for construction projects are judged in terms of fitness for purpose, aesthetics and buildability. Thus there is a challenge facing designers to seek out and find other construction methods that give the same or similar results than a more inherently high risk option. In this regard, designers may be assisted by development and promulgation of design solutions to construction phase OHS problems.

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## Conclusions About Regulation of the Safe Design of Buildings, Structures and Other Construction Projects

The role of upstream parties in influencing OHS in the construction and end use of buildings, structures, other construction projects (such as bridges or dams) and structural materials is only addressed in a limited way in the Australian OHS statutes. Yet there are a range of OHS matters that are within the control of those involved in designing and planning construction projects. Some of these matters are: the nature of floor surfaces selected for buildings; roofing materials and surface characteristics such as fragility, slip-resistance and pitch; confined spaces; electrical installations and RCDs; acoustic properties and noise control; access to working spaces for construction, cleaning and maintenance; specific ventilation requirements for the work to be performed on the premises; and choice of structural materials and components to facilitate assembly and manual handling.

In Part Three we reviewed some approaches to regulation of safe design in relation to construction projects. These are summarised below to highlight some of the key features and differences in approach.

In South Australia, the *Occupational Health, Safety and Welfare Act* establishes general duties of care of some upstream parties and the *Occupational Health, Safety and Welfare Regulations* identify the OHS matters to be addressed by different duty holders. Regulations are (in general) drafted without reference to a specific duty holder (to avoid overly wordy regulations). Duty holders are referred to schedules to the regulations to identify which regulations they must comply with (refer to Appendix Four for a copy of the schedule). Upstream parties share responsibility with employers and others (to the extent of their control over a particular matter).

In Western Australia, OSHA (WA) establishes the general duties of care of some upstream parties. A code of practice has been proposed to support this general duty, addressing the design and construction of buildings and other structures, and emphasising the role of architects, engineers and other designers.

The *Building Code of Australia* (BCA), adopted in state/territory based building legislation, regulates the activities of architects, engineers and others involved in the design of buildings and some structures. It focuses on some aspects of safety relevant to building occupants and end users but does not deal with the OHS of those constructing the building. Nor does it deal with a wider range of OHS matters, related to building design, which may affect end users, occupants or those maintaining, cleaning or servicing the building. The BCA and building legislation have three key features that are worth highlighting as a possible basis for developing safe design regulation to address OHS aspects of building safety. They have the advantage of being familiar to engineers, architects and other designers of construction projects.

The first feature is the use of performance-outcome provisions to establish the required outcome but allowing designers flexibility to select materials, components, forms of construction and designs that suit a particular building or structure. The second feature is the use of building solutions to provide means of complying with the

performance requirements. These might be technical standards (such as Australian Standards). They might be specific solutions that provide examples of materials, methods or other design factors that are deemed to comply. As discussed in Section 9.9, designers may require safe design building solutions in order to understand the possibilities for improving construction site safety in the design of the project (some examples of design solutions were illustrated in Table 9). Alternatively, compliance with performance requirements might be established by approved forms of documentary evidence such as results of particular tests, design verification processes, certification from a professional engineer or other accredited body.

The third feature of the building regulatory regime that could be linked to the OHS regulatory regime is the planning approval process. For example, a requirement to notify the project to OHS authorities and/or to submit an OHS plan for the construction project at the same time as the building plans. This need not entail a formal approval by the OHS authority but could provide a means of advising the authority of projects; for example, with a view to targeting safe design aspects of higher risk projects.

A crucial question is whether to seek integration of safe design to address OHS matters under the building legislation, or to establish requirements under the OHS statutes. Arguably, the BCA, as the primary reference point for designers of buildings and structures, is the most logical place to incorporate requirements for safe design to address OHS matters. However, if this is not preferred either by OHS or by building safety regulators, there is a strong argument to at least adopt a complementary approach such as the three key features of building legislation as outlined above.

The last regulatory regime reviewed in Part Three was the European Union's *Construction Site Directive* and the law of member states implementing this. Rather than establishing performance-outcome requirements and identifying safe design solutions, this regime emphasises processes of planning, coordination and transfer of information, involving the different parties in the planning and construction phases of projects. There are also documentation requirements to develop an OHS plan and an OHS file, and a requirement to notify construction projects to the relevant authority. Intuitively, the success of such a system depends on its key players having the knowledge, capacity and motivation to work together, to identify OHS problems and plan to address them. There is some evidence to suggest that the small size of many firms in the construction industry, and the limited experience of designers in regard to OHS matters, may not be compatible with this regime.

In conclusion, a more suitable regime may be one that helps to develop the knowledge and capacity of designers to address the OHS matters which, in the words of the High Court in *Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR 304 (at 319) are within the power of the designer to control, supervise or check. Such a regime may be one that defines OHS performance-outcomes and offers safe design solutions that designers can apply or benchmark against, in developing new solutions. Building legislation provides a model for this approach. Existing OHS regulations, codes of practices, technical standards and databases of OHS design solutions, provide some raw materials for developing such a regime.

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## **PART FOUR**

### **Regulation of Safe Design of Business Franchising Systems and Regulation of Workplace Substances**

Part Four discusses two of the designed-products: the business franchising system and workplace substances.

Section 10 discusses the role of the franchisor in planning, designing and controlling the nature of the business operations of the franchisee, with consequences for OHS in these operations. The application of the Australian OHS statutes to business franchising systems is discussed as well as the regulation of these systems under trade practices legislation. Specific regulation of the OHS aspects of business franchising systems has not been identified in overseas sources.

Section 11 reviews the regulation of workplace substances. It focuses primarily on regulatory regimes in Australia but also identifies how these have drawn on regulatory models from overseas. Substances include those that are hazardous to health and/or dangerous in regard to specific physico-chemical properties.

## **10. Regulation of Safe Design of Business Franchising Systems**

### **10.1 The Nature of the Business Franchising System**

In a business system franchise, the franchisee operates a business under the name of an established brand that is owned by the franchisor. In return for a fee paid to the franchisor the franchisee has the right to sell or produce the brand name product. They use the trade name, trade mark and process or other commercial resources of the franchisor. The franchisor develops a system of doing business and the franchisee is required, by contractual agreement, to follow closely the franchisor's methods of operation (Mendelson, 1996: 5 and Champion, 1996: 1). Implementation of the system by the franchisee is often inspected and enforced by the franchisor, who often reserves the right to terminate the franchise agreement if the franchisee fails to follow the specified business system (Johnstone, 1999: 108). While the franchisee typically owns the assets, (Hadfield, 1992: 932) they may be bound, by contractual agreement, to lease premises from the franchisor, or to lease premises on which the franchisor or his/her associate has taken out a lease, and/or to acquire goods specified by the franchisor (Australian Competition and Consumer Commission, 1998).

Work premises, work methods and goods such as equipment or substances are all areas in which risks to health and safety can arise, as already identified in this report. To the extent that the contractual agreement drawn up by the franchisor establishes particular requirements in relation to any of these matters, the franchise blueprint may influence the OHS of the franchisee and his/her employees.

The potential for the franchisor to control matters that influence OHS in the franchise operations is all the more significant when the extent of franchising is taken into account. A survey commissioned by the Franchising Council of Australia into franchising practice in this country identified 730 franchise systems and 44,800 franchised outlets (McCosker and Frazer, 1998). They are common in a range of industries including fast food, garden and home maintenance, and petroleum supply (Johnstone, 1999: 103).

Thus, a franchisor's plans and designs of business franchising systems have the potential to impact significantly on the OHS of the downstream franchisees and their employees. The business franchising system therefore warrants consideration for regulation to control adverse OHS impacts.

### **10.2 Regulation of Business Franchising Systems Under the Australian OHS Statutes**

Business franchising systems are not specifically regulated under the Australian OHS statutes. However, some of the statutory duties of care might apply to a franchisor. Whether particular duties apply or not will depend on the nature of the contractual agreement between the franchisor and the franchisee.



## **The duty of employers and self-employed persons to others**

The most relevant statutory duties are the duties of an employer or self-employed person to others, under the OHS statutes in Victoria<sup>23</sup> and Queensland. Under OHSA (Vic) s 22:

"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". (emphasis added)

Similarly WHSA (Qld) ss 28(2) and 29 establish that an employer or self-employed person has an obligation to ensure that the workplace health and safety of others is not affected by the way the employer or self-employed person conducts their undertaking.

In *Whittaker v Delmina Pty Ltd* [1998] 87IR 268 Hansen J confirmed the scope of the duty under OHSA (Vic) s 22 to non-employees:

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

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

"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. The broad judicial interpretation of 'the conduct of the undertaking' ... suggests that the franchisee's operation falls within the 'conduct' of the franchisor's 'undertaking'. Consequently a franchisor would have a duty to conduct its undertaking to ensure, subject to the qualifications of practicability in Victoria or reasonable precautions and proper diligence in Queensland, that all persons affected by the franchisee's operations are not subjected to risks to their health and safety."

Thus, the duties under OHSA (Vic) and WHSA (Qld) are the most all encompassing in requiring the duty holder to address a range of risks arising from the conduct of the

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<sup>23</sup> While employers and self-employed persons owe a duty to others persons under the other OHS statutes the nature of the duty is restricted to others who are at the employer/self-employed persons workplace (or near it) or affected by that work. The duties do not extend to the "conduct of the undertaking" as in WHSA (Qld) and OHSA (Vic).

undertaking. Where the employer or self-employed person is a franchisor, these duties might apply to the conduct of the business franchising system.

### **Duties of persons in control of premises or plant used at work**

As discussed in Section 10.1, in some instances a franchisee may be bound, by contractual agreement, to lease premises from the franchisor or to use plant as specified by the franchisor. In such circumstances the franchisor may be the person who has control of the premises or plant.

In two states, in particular, the person who has control of work premises has specific duties that might apply to business franchising arrangements. Under OHSA (NSW), "A person who has control of premises used by people as a place of work must ensure that the premises are safe and without risks to health" (OHSA (NSW): s 10(1)). There is a corresponding duty in relation to plant and substances (OHSA (NSW): s 10(2)). Similarly, under OSHA (WA): s 22(1) a person who has, to any extent, control of a workplace or the means of access to and egress from a workplace, must take such measures as are practicable to ensure that the workplace, or the means of access to or egress from the workplace, are such that persons are not exposed to hazards.

These provisions apply to persons who have even limited control over premises used as a place of work or plant used at a place of work, but the duty only extends to those matters over which a person has control (OHSA (NSW): s 10(4)(a); OSHA (WA): s 22(1)). In *McMillan, Brittan & Kell Pty Ltd v WorkCover Authority of New South Wales* [1999] 89 IR 464 it was held that the applicable meaning of control requires controlling in the sense of "directing action" or "command" - the ability of a person to compel corrective action to ensure occupational health and safety, having in mind the context and purpose of the statute". More than one person can exercise the requisite degree of control over premises, although control may shift from one person to another (see *McMillan, Brittan & Kell Pty Ltd v WorkCover Authority of New South Wales* [1999] 89 IR 464 at 480-481).

Under the former OHSA (NSW), 1983, the equivalent provisions were under sections 17(1)(a) and (b) respectively. In *WorkCover Authority of NSW (Inspector Ankusic) v McDonald's Australia Ltd* (1999) 95 IR 383 a prosecution was taken pursuant to these provisions following a fatality involving a young worker at a McDonald's restaurant. The worker was electrocuted when he came into contact with an exposed inner core of an electrical cable attached to kitchen equipment. The first defendant in the case was McDonald's Australia Ltd which co-ordinates McDonald's Family Restaurants throughout Australia by means of franchise arrangements as well as by direct operation of restaurants. The restaurant at which the fatality occurred was operated by franchise, under a license agreement with the employer of the deceased employee. The second defendant, McDonald's Properties Australia Pty Ltd was a wholly owned subsidiary of McDonald's Australia Ltd, and was the registered proprietor of the land on which the premises were situated and the lessor of the premises to the employer.

The prosecution of the first defendant was brought pursuant to s17(1)(b) of the Act. It was alleged that McDonald's Australia being a person who had to any extent control of plant which was provided for the use or operation of persons at work failed to ensure the plant was safe and without risks to health. In particular, the first defendant failed to ensure that particular kitchen equipment was safe. The second defendant was prosecuted pursuant to s17(1)(a) of the OHSA (NSW), 1983. It was alleged that the defendant, being a person who had to any extent control over non-domestic premises made available to persons as a place of work failed to ensure the premises were safe and without risks to health. In particular, the defendant failed to adequately provide for and ensure accessibility of power outlets to be used for mobile kitchen equipment; the installation of Residual Current Devices for each power outlet used for mobile kitchen equipment; adequate labelling of power outlets and switch board; floor tiles suitable for the movement of mobile kitchen equipment; and power outlet suitable for mobile kitchen equipment.

Both defendants pleaded guilty. The first defendant was fined \$120,000 for the offence under s17(b) of the Act, in relation to plant. The second was fined \$150,000 with regard to the offence under s17(a) of the Act, for the offence in relation to premises. This case shows that franchisors who exercise control over the franchisee's operations owe duties to employees of franchises, and that franchisors, or persons associated with franchisors, who design, build or lease premises for use at work must properly consider health and safety aspects of those premises.

### **Application of other statutory duties to business franchising systems**

In addition to the duties discussed above, there are other statutory duties that might apply to a franchisor, depending on the nature of the contractual agreement for a particular business franchising system. For example, a franchisor might own premises, which the franchisee is bound, by contractual agreement, to use. In this case the duties of building owners might apply. Building owners have a duty of care under OHSWA (SA): s 23A(2)) to ensure, so far as is reasonably practicable, that the building, and any fixtures or fittings within the building that are under the control of the owner, are in a condition that allows people who might work in, on or about the workplace to be safe from injury and risks to health. There is a similar duty under WHA (NT): s 30C which requires the owner of a building or structure at or used as a workplace, including fixtures and fittings under the owner's control, to ensure, so far as is practicable, that the health and safety of any person is not adversely affected as a result of its condition or use.

It is also possible that a franchisor might influence the design of premises used for a franchise business, in which case the duties of designers of buildings used as workplaces might apply. As discussed in Sections 7.1 and 7.2 of this report, OHSWA (SA): s 23A(1) requires that a person who designs a building, that is reasonably expected to comprise or include a workplace must ensure, so far as is reasonably practicable, that it is designed so that people who might work in, on or about the workplace are safe from injury and risks to health. Similarly, under OSHA (WA): s23(3a) a person who designs a building or structure for use at a workplace must, so far as is practicable, ensure that the design of the building or structure is such that persons who properly construct, use, maintain, repair or service the building are not exposed to hazards.

Further to this, a franchisee might be bound, by contractual agreement, to acquire goods supplied by the franchisor. In such cases the duties of suppliers of substances (see Sections 11.2 and 11.3) or the duties of suppliers of plant (see Sections 3.1 to 3.9) might apply to a franchisor. However, it is probably more common that the franchisee is required to acquire goods specified by the franchisor (see Section 10.1) rather than supplied by the franchisor.

Notwithstanding the possibility that the specific duties discussed here might apply to a franchisor due to the nature of particular contractual arrangements, as discussed above it is really the whole business franchising system, the "blueprint", that determines the nature of the relationships and the influence that the franchisor has on OHS matters. Thus it is the whole "conduct of the undertaking", that is most relevant. At present such a duty only exists under OHSA (Vic) and WHSA (Qld).

### **10.3 Other Australian Law Regulating Business System Franchises**

The *Franchising Code of Conduct 1998*, made under the *Trade Practices Act 1974*, provides some protection for the franchisee in relation to general business operations. The code has the force of law and applies generally to franchise agreements entered into, renewed or extended with some specific exceptions<sup>24</sup>. The code requires that franchisors disclose specified information to current and prospective franchisees.

Current franchisees are entitled to information about leases for premises leased from the franchisor or by the franchisor or its associate. They are also entitled to a financial statement for any marketing or other cooperative fund that the franchisee must contribute to.

A prospective franchisee, before entering into a franchise (or renewing or extending one), is entitled to receive from the franchisor, a copy of the franchising code and a disclosure document which covers matters relevant to the commercial viability of the franchise as well as details of criminal, trade practices and other litigation. Two of the items to be disclosed are the detail of goods and services the franchisee is required to acquire or provide, including restrictions and obligations on where they buy, and the franchisor's policy on site selection and details on the history of the site.

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<sup>24</sup> It does not apply where: (1) an overseas franchisor uses only one franchise or master franchise in Australia; (2) the franchise agreement is covered by another mandatory code; or (3) sales under the franchise are likely to provide no more than 20 per cent of the gross turnover for the first year of the franchise and the franchise has been supplying the same goods and services for two years immediately before entering the agreement.

If a franchisor breaches the code, the franchisee may be entitled to damages under the *Trade Practices Act*, court orders to stop breaches of the code or other orders such as changes to the agreement. There are also arrangements for mediation. Action is normally initiated by the franchisee involving a legal adviser. However, the ACCC may take action on behalf of the franchisee. This may include seeking court orders to stop a breach of the code continuing, a change to the franchise agreement, compensation for affected franchisees; or written undertakings from franchisors and corrective advertising.

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## **Conclusions About Regulation for Safe Design of Business Franchising Systems**

The blueprint for operating a business franchising system developed by a franchisor may specify the form of work premises, machinery and equipment, substances and work methods (or some combination of these) to be used by the franchisee and his/her employees. The system design and plans developed by the franchisor may significantly influence the OHS of those working to the blueprint, in business franchises downstream. While a well-designed system can enhance health and safety, a poorly designed one can impose risks on others that may be difficult for the franchisee (as the employer) to address in the context of the binding contractual agreement of the franchise.

While some of the duties under the Australian OHS statutes might apply to franchisors, none of them is comprehensive in its approach nor do any of them specifically apply to business franchising systems. Under the current provisions of the Australian OHS statutes, the extent of any duty owed by a franchisor is determined by: (1) the specific statutory provisions that apply in the jurisdiction(s) in which the franchisor operates; and (2) the nature of the role(s) of the franchisor in a specific franchise agreement. This is a rather ad hoc approach to the regulation of a significant and growing area of business practice.

The *Franchising Code of Conduct 1998*, made under the *Trade Practices Act 1974*, provides some protection for franchisees in regard to disclosure of information about leases, financial and other matters that may impact upon the commercial viability of the business. Franchisees and their employees, their contractors and customers/clients, deserve similar protection in relation to OHS, to ensure that they are not exposed to risks to health and safety arising from the franchisor's conduct of his/her undertaking.

Some starting points for regulation in this area are the duties of employers and self-employed persons under the Victorian and Queensland OHS statutes. However, the relevant provisions, which are concerned with risks arising from the "conduct of the undertaking", are broad in their scope and do not give any direction about the kinds of risks that a franchisor should address. In Part Five of this report, in particular Section 12.5, there is discussion of the use of performance-outcome provisions as a means to provide relevant direction but allow flexibility for the duty holder to achieve those outcomes in a manner appropriate to the particular system design.

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## 11. Regulation of Workplace Substances

### 11.1 Overview of the Regulation of the Safe Design of Substances

A substance may be a chemical entity, composite material, mixture or formulation. It may occur naturally or be artificially made (see for example NOHSC, 1994c: 8). Substances may be in different forms (solid, liquid, gas, vapour) but do not include articles.

There is some uncertainty about the application of the concept of "design" to substances. For example, most of the Australian OHS statutes begin the life cycle of substances with the manufacturer (refer to Table 3 in Part One of this report). Only OHSA (NSW): s 11 and WHA (NT): s 30B combine the upstream duties for plant and substances and thereby include duties on designers of substances along with designers of plant. It is probably more conventional to refer to the processes by which artificial substances, at least, are created as processes of planning, research and development. Nonetheless, the principle that "safe design" is concerned with eliminating hazards and controlling risks to health and safety "at the source" can be applied to the development of substances.

Applying this principle to substances, intuitively there would appear to be several ways in which hazards might be eliminated or risks controlled at the source. These include:

- elimination (including prohibition) of particular substances;
- modification of substances, for example, by changing chemical composition of composite materials, mixtures and formulations;
- design of packaging to minimise risk of exposure; and
- elimination or control of risks in the design of processes for the manufacture of substances (controlling risks at source for workers exposed to substances in production).

Elimination of hazards and control of risks at source is not a strong focus of OHS law, either in Australia or overseas. While there are upstream duties, especially for manufacturers, importers and suppliers, they are most developed in the area of classification of substances, their testing and the provision of information in the form of material safety data sheets (MSDS) and labels.

In OHS law, the first strategy above, elimination, has been applied in a very limited way to prohibit specific substances, as will be discussed further below in Sections 11.3 and 11.5. The second strategy, modification of chemical composition, might be applied by those involved in research and development or manufacture. Arguably, the duty of care of manufacturers and importers of substances in some of the Australian OHS statutes, to ensure that a substance is "safe and without risks to health" could extend to substituting hazardous ingredients (see Section 11.2 for a discussion of this duty).

The third strategy, safer packaging, is a requirement of dangerous goods standards (see for example the *ADG Code*, Federal Office of Road Safety, 1998 and the *National Standard for the Storage and Handling of Dangerous Goods*, NOHSC,

2001: cl 9(4)). However, it is less well developed in relation to the adverse health effects of substances, that is "hazardous substances" (NOHSC, 1994c).

Likewise, the fourth strategy, the design of processes for production of substances is not a specific focus of OHS law. However, the responsibilities of employers under OHS legislation deal with protecting the health and safety of workers and to this extent employers planning or procuring processes for the manufacture of substances may specify design requirements to eliminate hazards or control risks in the processes for the manufacture of substances. In addition, to the extent that substance production processes involve "plant" the designers and manufacturers will have responsibilities in relation to that aspect of the process. Also, if a facility for the production of substances is a major hazards facility then the operator of such a facility will have responsibilities in relation to hazard identification, risk assessment and risk control (see for example the *National Standard for the Control of Major Hazards Facilities*, NOHSC, 2002d, cl 6.2).

## 11.2 Regulation of Substances Under the Australian OHS Statutes

All of the Australian OHS statutes (except those in Tasmania and WA) establish a duty of care on the manufacturer, importer and supplier of any substance (for use at work) to ensure (subject to the usual qualification of practicability<sup>25</sup>) that it is "safe and without risks to health". Under OSHA (WA): s 23(3) and WHSA (Tas): s 14(2) the duty is to require the manufacturer, importer or supplier to ensure that toxicological data is provided when the substance is supplied.

Testing is also required in the other jurisdictions except in New South Wales. In general, this is a duty to test and examine, or arrange for the testing and examination of the substance, to ensure that it is safe and without risks to health. In two jurisdictions the duty is stated more strongly. Under OHSA (ACT): s 32(2) and OHS(CE)A: s 18(2) the research, testing or examination is required "in order to discover, and to eliminate or minimise, any risk to the health or safety of employees that may arise from the use of the substance".

Information is also to be provided in connection with the supply of a substance. There is variation in the information to be provided. It may include:

- adequate information about the substance (NSW);
- any danger or health hazard associated with the substance (NT, Qld);
- the use for which it was manufactured and tested (ACT, Cwlth);
- details of its composition (ACT, Cwlth, Qld, NT);
- any conditions necessary to ensure that, when put to the use for which it was designed and tested/properly it will be safe for employees and without risks to their health (ACT, Cwlth, NT);
- adequate information about any conditions necessary to ensure safe use, handling, processing, storage, transportation or disposal (SA, Vic); and

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<sup>25</sup> The qualification is expressed in terms of "practicable", or "reasonably practicable", or to take "reasonable precautions" and exercise "proper due diligence". See Part One, Section 2.6 for a discussion of this qualification in Australian OHS law.



- the results of tests (NT, Qld, Vic). which have been carried out on or in connection with the substance and about any conditions necessary to ensure that it will be safe and without risks to health when properly used (Vic);
- the first-aid and medical procedures that should be followed if the substance causes injury (ACT, Cwlth).

Those jurisdictions that require that the substance is "safe and without risks to health" (all except WA and Tas) also qualify this duty. The substance is to be safe "when properly used", although under OHSWA (SA): s 24(3) the duty extends to considering "reasonably foreseeable forms of improper use, handling, processing, storage, transportation or disposal".

Thus, although the OHS statutory duties vary, in all jurisdictions except Western Australia and Tasmania, the duty has three distinct elements: (1) ensuring the substance is safe and without risks to health; (2) testing the substance; (3) providing information. It is uncertain what could be expected of manufacturers, importers and suppliers to ensure that a substance is safe and without risks to health. However, as the duties to test and provide information are distinct duties, it would appear that something more might be expected. Perhaps this could include some of the safe design strategies such as contemplating different compositions, formulations or mixtures, or methods of containing and packaging the substance that minimise exposure.

The duty to ensure a substance is safe and without risks to health is not developed further in the Australian OHS regulations. These adopt the *National Model Regulations for the Control of Workplace Hazardous Substances* (NOHSC, 1994c). As discussed in the following sections, the emphasis is on the role of upstream parties to provide information (on the basis of testing and classification of substances). Arguably there is still a case to consider that aspect of the duty, envisaged by most of the Australian OHS statutes, to actually make a substance safer at the source.

### 11.3 Workplace Hazardous Substances

In 1994 NOHSC declared *National Model Regulations for the Control of Workplace Hazardous Substances* (NOHSC, 1994c). The model regulations are supported by *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999a), a *List of Designated Hazardous Substances* (NOHSC, 1999b), a *National Code of Practice for the Control of Workplace Hazardous Substances* (NOHSC, 1994d); a *National Code of Practice for the Preparation of Material Safety Data Sheets* (1994b) and a *National Code of Practice for the Labelling of Workplace Substances* (1994e). All Australian OHS jurisdictions have given effect to this regulatory package.

The national model regulations and associated elements of the package focus on workplace substances in relation to the potential for adverse health effects. They place duties on manufacturers and importers of hazardous substances in regard to the classification of substances and provision of information, and the distribution of information by suppliers. The elimination and risk control duties of the national model regulations apply to employers, in relation to the use of hazardous substances in the workplace.

In the standards development process for the national model regulations, significant overseas regulatory regimes for workplace substances were taken into account. This included the Canadian Workplace Hazardous Materials Information System (WHMIS). WHMIS is Canada's hazard communication standard. Its key elements are labelling of containers of WHMIS "controlled products", and the provision of material safety data sheets (MSDSs) and worker education programs (Canadian Centre for Occupational Health and Safety, 2002). Also considered was the US *Hazard Communication Standard* (the "right to know standard") made under the *Occupational Safety and Health Act 1970*. The US standard requires that employees are provided with information through labels, MSDS, training and lists of hazardous chemicals in each work area (Knudsen and Keoleian, 2001).

However, the principal overseas model drawn upon in the development of Australia's regulatory regime for workplace substances, model was that of the European Union (EU). Key sources were the EU systems for classification and labelling, and the UK *Control of Substances Hazardous to Health Regulations* in relation to the duties of employers to manage hazardous substances in the workplace. The EU classification criteria for dangerous preparations were adopted as NOHSC's (1999a) *Approved Criteria for Classifying Hazardous Substances* and the EU list of dangerous preparations formed the basis of the *List of Designated Hazardous Substances* (NOHSC, 1999b). The relevant EU requirements were Council Directive 67/548/EEC (as amended by Directive 96/54/EC) and Council Directive 88/379/EC (as amended by Directive 93/18/EC). These are now superseded by "Council directive 1999/45/EC of the European parliament and of the council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the member states relating to the classification, packaging and labelling of dangerous preparations" (European Commission, 1999). The *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994e) recognises the labelling systems for dangerous goods, scheduled drugs and poisons, and agricultural and veterinary chemicals, to avoid conflicting requirements.

Prohibition of specific hazardous substances, in relation to specified use, is provided for in the national model regulations (NOHSC, 1994b: Schedule 2). Few have been identified although individual jurisdictions may add to the set of scheduled prohibitions. The *National Model Regulations for the Control of Scheduled Carcinogenic Substances* (NOHSC, 1995) contain two schedules: Schedule 1 lists substances which are prohibited except for use in research and analysis; Schedule 2 lists substances which require notification of use to the relevant public authority. Other than these prohibitions, the national model regulations and associated codes and technical documents for substances do not address control of risk at source in regard to the role of manufacturers, importers or suppliers.

## 11.4 Regulation of Dangerous Goods

The National Occupational Health and Safety Commission has declared a national standard and a national code of practice for the storage and handling of workplace dangerous goods (NOHSC, 2001a and 2001b). The national standard and code are not yet fully adopted by the jurisdictions. The intent is that the national standard will provide a consistent framework for control of the storage and handling of dangerous goods (Classes 2, 3, 4, 5, 6.1, 8, 9, Combustible Liquids and Goods Too Dangerous To Be Transported), to protect the health and safety of workers and the public, and to protect property and the environment. Like hazardous substances, the manufacturers and importers of dangerous goods must classify them and produce information in the form of labels and MSDS. It is intended that the same labelling and MSDS codes (when updated) will apply to both groups of substances. Manufacturers and importers must ensure proper packaging of dangerous goods. Thus there is some focus on controlling risks in regard to containers and packaging of these substances.

## 11.5 Notification and Assessment of Industrial Chemicals

The *Industrial Chemicals (Notification and Assessment) Act 1989* is a Commonwealth government scheme requiring the notification of industrial chemicals that are newly manufactured or imported into Australia. These chemicals must be notified to NICNAS and assessed before being imported into or manufactured in Australia. An *Australian Inventory of Chemical Substances* is maintained. The NICNAS assessment takes into account risks to occupational health and safety, public health and the environment. Overseas hazard assessment reports are considered but data must be applied to Australian conditions, with regard to demographics (NICNAS, 2001a: 3). The assessment is performed by NICNAS using a technical dossier provided by the manufacturer or importer. This must contain all the information required for the assessment (NICNAS, 2001a: 5).

Priority existing chemicals are also assessed. Selected existing substances are declared by notice in the *Chemical Gazette* and subjected to a detailed assessment process (NICNAS, 2001a: 5). Recommendations are made about risk control.

A further element to the NICNAS scheme is the annual registration of companies which import or manufacture certain industrial chemicals above prescribed threshold amounts. This is the basis of a *Register of Industrial Chemical Introducers* (NICNAS, 2001a: 6). A high volume industrial chemicals list has also been established to follow chemicals that are manufactured or imported in large quantities and identify which industries use these chemicals (NICNAS, 2001b: 2).

Offences under the *Industrial Chemicals (Notification and Assessment) Act 1989* may attract fines in the range \$16,500 to \$165,000. The Federal Court may also grant an injunction to restrain a company or person from importing or manufacturing industrial chemicals in breach of the Act.

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## Conclusions About Regulation for the Safe Design of Workplace Substances

The established approach to regulating workplace substances begins with the testing and evaluation of substances in order to classify their toxicological as well as physico-chemical properties. This information then provides the basis for producing labels and material safety data sheets. The Australian regime for regulating workplace "hazardous substances" is consistent with European directives on dangerous preparations, and with the information provision approach taken in North America. The Australian regime for "dangerous goods" is consistent with international requirements as adopted by the *Australian Code for the Transport of Dangerous Goods by Road and Rail*.

The registration of existing industrial chemicals and notification of new ones under NICNAS provides a system for tracking industrial chemicals in use in this country, as well as assessment of new imports, newly manufactured substances and priority existing chemicals.

There are mechanisms under both the *National Model Regulations for the Control of Workplace Hazardous Substances* and under NICNAS to prohibit the use of certain substances. However, prohibitions are exceptional. Thus elimination of hazards or control of risks at the source (in manufacture, import or supply) of workplace substances is rare. While a manufacturer might make changes to chemical composition of a substance or re-design containers or packaging to minimise hazardous exposure, such efforts are largely voluntary (except in relation to specific packaging requirements for dangerous goods).

However, the specific requirements of regulations regarding classification and information provision sit along side a duty of care in most of the jurisdictions that requires manufacturers, importers and suppliers (in two jurisdictions designers) of substances to ensure that substances are safe and without risks to health. It is doubtful whether this could be satisfied, in the case of particularly hazardous substances, by classification and information provision alone.

Arguably, there is scope to place greater emphasis on safe design in the development of workplace substances by requiring: (1) elimination (for example, by prohibition) of particularly hazardous ingredients or substances; (2) modification of substances, for example, by changing chemical composition of composite materials, mixtures and formulations; (3) designing packaging to minimise risk of hazardous exposure; and (4) elimination or control of risks in the design of processes for the manufacture of substances (controlling risks at source for workers exposed to substances in production).

Finally, it is noted that although the current approach to regulation of workplace substances is not a safe design approach, as it emphasises testing, classification and provision of information, nonetheless the current arrangements have the advantage of being consistent with international approaches to the regulation of workplace substances.

## **PART FIVE**

### **Some Principles and Elements for Regulating Safe Design**

The preceding discussion of regulatory regimes in Australia and overseas provides a basis for considering possible future directions in regulation to promote safe design. Part Five of the report canvasses some broad principles and some elements which might provide the basis for future regulation. It is intended that these be considered for all of the designed-products, that is, for: plant including machinery, equipment, appliances, tools and safety components of these; buildings, structures, other construction projects and structural materials; business franchising systems; and workplace substances. These principles and elements are not presented as a "blueprint" but rather as the basis for discussion. While this part focuses on possible provisions of legislation, whether this is in Acts, regulations or evidentiary standards, Part Six of the report canvasses strategies for compliance and enforcement of legislation, and includes discussion of the legislative provisions relevant to enforcement.

## **12. Some Principles and Elements for Regulating Safe Design**

### **12.1 Coverage of Different Types of Designed-Products**

This report has focused on safe design regulation as it applies to four types of designed-products. While there is some OHS law applicable to each of these, there are gaps and weaknesses in the way that safe design is addressed, which have been identified in Parts One to Four of the report.

The following are key designed-products:

- (1) plant including machinery, equipment, appliances, tools and safety components of plant;
- (2) buildings, structures, other construction projects (for example bridges and dams) and structural materials (with a focus on safe design for safe construction as well as for safe end use);
- (3) business systems (especially business franchising systems);
- (4) workplace substances.

Following the review of safe design regulation, “safety components” are included in the scope of plant, as the design and performance of these is integral to the safe design of plant (refer to Sections 4.3 and Section 4.14 for relevant discussion of safety components and the European *Machinery Directive*).

The principles and elements presented below provide a basis for considering how safe design might be regulated. The principles and elements are: (1) consistency of safe design provisions; (2) responsibility for safe design functions; (3) systematic processes for safe design (including risk management, testing and examination, and information provisions; (4) performance outcomes for safe design; (5) evidentiary standards to support safe design; (6) documentation of safe design; (7) safe design mark; (8) technical assessment and design verification; (9) notification of certain designed-products; (10) OHS training and competency for safe design; and (11) qualification of safe design duties.

It is likely that different designed-products will require somewhat different regulatory approaches. Nonetheless, it is suggested that the application of the different principles and elements be considered in relation to each of the four key designed-products. They might also be applied to other designed-products that have not been the specific focus of this report.

### **12.2 Consistency of Safe Design Provisions**

#### **12.2.1 Overview of consistency issues**

Part One of this report flagged the issue of inconsistency as an area of concern. Several dimensions of this were identified: (1) cross-border differences between Commonwealth, state and territory jurisdictions; (2) different regimes for regulating particular designed-products, for example OHS, trade practices and public safety; (3) different requirements for designed-products originating overseas from those made in

Australia. In addition, inconsistency can arise from different enforcement strategies adopted by OHS authorities (discussed further in Part Six of this report).

A further area has emerged from the reviews of regulation for plant and substances in particular. This is the difference in the scope of some duties under the OHS statutes, as compared to regulations made under those statutes. For example, "plant" is very broadly defined under the OHS statutes but regulations often focus on plant that is power-driven in some form. Substances are broadly defined and require information and testing (usually) under the OHS statutes, whether or not they are "hazardous" substances. Manufacturers and importers have a duty to ensure that substances are safe and without risks to health<sup>26</sup>, under most of the OHS statutes. However, regulations focus the duties of manufacturers and importers on classification (which requires testing) and specific types of information (MSDS and labels).

The principles of statutory interpretation are that where regulations are made which deal with the subject matter of a general section in a statute, the provision of that general section is superseded, as to its subject matter, by the regulations. Such a substitution can only take place if there is compliance with the regulations (see generally *Automatic Wood Turning Ltd v Stringer* [1957] AC 544, especially 551-552; *Miller v Boothman and Son Ltd* [1944] KB 337; and *John Summers Ltd v Frost* [1957] AC 740. The general duty may still apply in relation to matters not covered by regulation (see *Automatic Wood Turning Ltd v Stringer* [1957] AC 544, at 552).

Therefore, it could be argued that regulations, in being more specific about what is required about the management of plant and substances, should be taken as the principal requirements. However, Acts and regulations both have legal standing. Even if regulations are more specific, if they do not address some matters that are addressed by the OHS statute, under which the regulations are made, then those aspects of the OHS statutes still apply. Moreover, Pearce and Geddes (1996: 76) advise that "in Australia the general rule has been that delegated legislation made under an Act should not be taken into account for the purposes of interpreting the Act itself". Thus it appears that both the OHS statutes and subordinate regulations will need to be taken into account. (See also Johnstone, 1997: 289-290 for a discussion of the interpretation of regulations and their relationship to general duty provisions).

For anyone trying to come to grips with their responsibilities, it can be a very time consuming, laborious and confusing process trying to make sense of the differences, within and between law from different sources. It may be that cross-jurisdictional variations are an inevitable part of the Commonwealth, state, territory based system of OHS legislation. However, this does not seem to be the case for some other non-federal areas of regulation. For example, the *Building Code of Australia* and the *ADG Code* (dangerous goods) are adopted in their entirety by states and territories. In Europe the *Machinery Directive* is consistently adopted by countries that are members of the European Economic Area. This Directive also covers machinery supplied for use at work as well as machinery for domestic and other non-occupational use, thereby addressing another area of consistency.

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<sup>26</sup> With the relevant qualification of (reasonably) practicable, reasonable precautions and proper diligence.

In summary, the first principle highlighted for the regulation of safe design is "consistency". Designed-products are supplied across state/territory borders, as well as in and out of the country. The problem of imported products failing to meet OHS requirements is well recognised. Designed-products are also supplied for different markets (occupational and the general public). It is counter-productive to the goal of safe design to have legal requirements that are difficult to make sense of. A coordinated national response is required by regulators. This is required across all elements of the legislative framework, that is, the OHS statutes, OHS regulations and evidentiary standards (and for the powers of inspectors and enforcement as discussed further in Part Six of this report).

Some possibilities that could be considered to achieve consistency are outlined below. It is emphasised that this discussion focuses on the upstream duties for safe design in view of the cross-border nature of manufacture, import and supply.

### **12.2.2 Template legislation**

The principle of a template is that it is used to reproduce the same features many times, in different contexts. With template legislation, legislation is passed in one jurisdiction and then adopted consistently and comprehensively as law in all jurisdictions. The process requires governments to resolve differences of approach and drafting before the law is adopted (Johnstone, 1997: 98-99). The template is adopted in its entirety by all jurisdictions. Consistent legal requirements are established but given effect under Commonwealth, state and territory law. In 1995, the Industry Commission (1995: 53-68) proposed this approach to achieve national consistency and mapped out the elements of a new enabling Act (although this did not deal comprehensively with upstream duties). To date, each jurisdiction has pursued OHS legislative reforms independently. In other areas there are successful examples of template legislation, for example the nationally consistent road transport legislation and uniform companies and securities legislation.

### **12.2.3 National legislation**

The Commonwealth government could use a relevant legislative "head of power" to establish national OHS legislation. One course would be to use the external affairs power to legislate to give effect to a relevant international convention. For example, the International Labour Organisation (ILO) *Convention Concerning Occupational Health and Safety and the Working Environment* (ILO convention no 155, 1981) requires that national policy be established to take account of various occupational health and safety matters. Amongst other provisions the matters to be addressed include the design, testing, choice, substitution, installation, arrangement, use and maintenance of the material elements of work including workplaces, the working environment, tools, machinery and equipment, chemical, physical and biological substances and agents, and work processes (Article 5). The use of the external affairs power to legislate to give effect to an international convention is well established. Examples of legislation enacted on this basis include the *Human Rights and Equal Opportunity Act 1986*, the *Disability Discrimination Act 1992* and the 1993 amendments to the *Industrial Relations Act 1988* (Part VIA). However, we note that use of the external affairs power is unlikely under the current federal government.



In addition to the external affairs power, it is possible that the Commonwealth could legislate in relation to at least some aspects of safe design using section 51 of the *Commonwealth Constitution* (CC) which gives the Commonwealth power (along with the states and territories) to legislate in relation to, amongst other matters, interstate, state/territory as well as international trade and commerce (CC: s 51(i)) and corporations (CC: s 51(x)). As discussed in Sections 4 and 11 of this report, trade in plant and substances across national as well as state/territory borders is widespread. Further to this, the Parliament of any states (or states) may refer matters to the Commonwealth Parliament for legislation (and they may also withdraw referred powers). A Commonwealth law made in this way extends only to those states whose Parliaments referred the matter (CC: s 51(xxxvii)).

Thus, there are various mechanisms by which the Commonwealth could legislate, at least in relation to the upstream duties for safe design, manufacture, import and supply, in order to establish a national regulatory regime.

#### **12.2.4 Integration of OHS requirements for safe design into other regimes**

A third approach to achieving national consistency, is to explore ways to address the OHS aspects of safe design under existing national or nationally coordinated regulatory regimes, other than the OHS statutes. This may be more relevant to some designed-products than others. We consider three regimes below.

##### **Building legislation**

In Section 8 of this report, it was suggested that the *Building Code of Australia* (BCA), as the primary reference point for building designers, might be the most logical place to incorporate requirements for safe design, to address OHS in the construction phase of buildings and structures, and safe design for end users and occupants of these. It would be possible, for example, in relation to each of the OHS matters to be addressed, to develop provisions in the form used in the BCA. This would involve development of appropriate performance requirements, deemed to satisfy solutions and methods of assessment for alternative solutions. It might also be possible to link into the building approval process, requiring scrutiny of OHS matters at this stage, or at least notification to the relevant OHS authority (see Section 8 for further discussion of the BCA).

##### **Trade Practices legislation**

The *Trade Practices Act 1974* (TPA) addresses product safety in relation to goods (which may include some workplace plant and machinery). It also regulates some aspects of business franchising systems. Indeed there is a *Franchising Code of Conduct 1998*, made under the TPA, which provides some protection for franchisees in relation to general business operations. However, the TPA does not place a primary emphasis on prevention of occupational death, injury and disease, and does not, in either the principal Act or in subordinate legislation, deal with processes or requirements for prevention. It is therefore unlikely that trade practices legislation is an appropriate "home" for safe design provisions to address OHS concerns.

## Chemical Assessment Legislation

It might be possible to bring together substance technical assessment and information provision requirements under a nationally consistent system that covers workplace substances. The *Industrial Chemicals (Notification and Assessment) Act 1989* establishes an existing Commonwealth regime, with requirements for registration, notification and technical assessment of industrial chemicals (see Section 11.5 for further discussion of this system). This Commonwealth legislation could provide an umbrella for the establishment of a national regime covering notification, technical assessment, classification, labelling and production of material safety data sheets. It could also take up some of the more specifically safe design considerations of requirements to eliminate particularly hazardous ingredients or substances; modify substances, for example, by changing chemical composition of composite materials, mixtures and formulations; designing packaging to minimise risk of hazardous exposure; and (4) eliminate or control of risks in the design of processes for the manufacture of substances (controlling risks at source for workers exposed to substances in production). (Refer to Section 11.1 for a discussion of the application of safe design principles to workplace substances).

Over and above the possibility of national legislation that brings together, under NICNAS, all aspects of the upstream duties in relation to safe design of substances, it is possible this could be extended to include the currently separate regimes of agricultural and veterinary chemicals, and perhaps other substances, with the current developments in the global harmonisation of technical risk assessment processes by the International Program on Chemical Safety (NICNAS, 2001b:3).

### **Progressive Summary - Consistency of Safe Design Provisions**

For a person or business that designs, manufactures, constructs, imports or supplies a designed-product, identifying legislation relevant to safe design involves consideration of : (1) differences in OHS legislation between Commonwealth, state and territory jurisdictions, as well as differences between OHS statutes and regulations within a jurisdiction; (2) different regimes for regulating particular designed-products, for example OHS, trade practices and public safety; (3) different requirements for designed-products originating overseas from those made in Australia. These different sources of variation are unlikely to enhance the goal of safe design. Some possibilities for achieving consistency are:

- (1) Template OHS legislation - legislation is passed in one jurisdiction and then adopted consistently and comprehensively as law in all jurisdictions. The process requires governments to resolve differences of approach and drafting before the law is adopted.
- (2) National OHS legislation enacted by the Commonwealth government using a relevant Constitutional "head of power" (for example the external affairs or trade and commerce power) or by a state/territory referring this area of law to the Commonwealth to enact legislation.
- (3) Integration of OHS requirements for safe design into other national or nationally coordinated regulatory regimes. This could include: (a) incorporation of OHS objectives, performance requirements and deemed to satisfy solutions into the *Building Code of Australia*; (b) integration of upstream requirements for substances, under a nationally regime, such as NICNAS or a new regime reflecting harmonisation of assessment and classification of agricultural, veterinary and other chemicals. An integrated regime would incorporate substance notification, registration, technical assessment, classification, labelling, and MSDS, along with requirements for safe design (eliminating or minimising hazardous ingredients, safe design of packaging and of chemical production processes).

These possibilities are not intended to set specific directions. They provide a basis for considering possible future regulatory regimes that enhance safe design as well as consistency.

### **12.3 Responsibility for Safe Design**

The opportunities to create intrinsically safer designed-products are greatest in the earliest life cycle phases of planning and design, manufacture or construction. In these early phases it is possible to design out hazards and/or incorporate risk control measures that are compatible with the original design concept and functional requirements of the design product. The phases of installation and erection, in the case of plant and structures, are also important in minimising risk. If risks can be eliminated or effectively controlled in these phases then OHS problems may be overcome for those who use or work with the designed-product downstream. Items can actually be made safer at the source.

The question arises as to whether those who design and make or construct should have specific duties to eliminate hazards and control risks at the source, as compared to those who supply. For example, a retailer, wholesaler or distributor may be less able to make the design of the product inherently safer. However, even here there may be possibilities to retrofit controls or make modifications to minimise OHS risks.

The regulatory regimes reviewed take different approaches to this. For example, the Australian OHS statutes generally assign the same responsibilities to designers, manufacturers, importers and suppliers, of plant and substances. However, the Australian OHS regulations in relation to plant and substances tend to expect somewhat less of suppliers but not of importers who take on the responsibility of the manufacturer if the latter is overseas. Indeed, if imported products are to meet the same OHS standards as locally made plant, substances and other products, it is essential that importers have the same responsibilities as manufacturers. Australian OHS law also tends to treat suppliers of new and second-hand items, such as plant, in the same manner as they are included in the definition of “supplier”. (Definitions of supply typically include retail sale, wholesale, exchange, second hand sale, auction, lease, hire, hire-purchase, distribution and any form of re-supply).

Trade practices legislation also does not differentiate between the parties but focuses on the supply of goods. The product safety provisions apply generally to “suppliers” of goods who could be any form of retailer, wholesaler, importer or manufacturer. Electrical equipment safety requirements also apply to suppliers in general. It is also relevant to keep in mind that even if statute law narrows the range of responsibility, the common law does not. A person who is negligent in the design, manufacture, construction, installation, erection or supply of a product could face the prospect of a common law action initiated by a person injured through that negligence.

The European directives reviewed in this report focus on the responsibility of particular parties. Manufacturers of machinery have principal responsibility under the *Machinery Directive*, although if another party such as an importer or an authorised representative is responsible for placing the machinery on the market, or putting it into service, then that party is responsible. The *Construction Site Directive* gives principal responsibility to the client and the project supervisor in the planning/design phase of the construction project, and the principal contractor in the construction phase. However, some member states, including the UK, Ireland and some Scandinavian countries, give responsibility to the designers of buildings and other construction projects.

The OHS Acts of some countries have specific duties for designers. Some of these are quite broad, such as the duty contained in the Finnish Occupational Safety and Health Act (1987: s 40b) which extends to any person who makes plans for workplaces, plant or work premises. Others focus on design professionals such as engineers and architects. Some examples of designers’ obligations under overseas OHS statutes are presented in Table 10.

**Table 10: Examples of Duties of Designers Under Overseas OHS Statutes**

OHS statute	Statutory Duty
<i>Occupational Safety and Health Act 1958(Finland)(1987 amendment)</i>	<p><b>Section 40b</b></p> <p>Everyone who, against remuneration, hands over the plans concerning a workroom, production premises, a working method or a machine or equipment used for the work concerned, is obliged to make sure that the occupational health and safety rules and regulations are taken into consideration in the way required by the use made of the object designed.</p>
<i>The Danish Working Environment Act 1998</i>	<p><b>Section 33</b></p> <p>Any person who makes a project for technical equipment, production plant, or building or construction work, shall in his project take into account safety and health in connection with the performance of the work and the functioning of the building or plant etc when completed.</p>
<i>The Work Environment Act 1978 (Sweden) (1991 amendment)</i>	<p><b>Section 14</b></p> <p>Architects, constructors and others involved in the planning (<i>of construction or heavy engineering work</i>) shall also ensure, within the scope of their assignments, that work environment viewpoints are taken into account.</p>
<i>Occupational Health and Safety Act 1990 (Ontario)</i>	<p><b>Section 31(2)</b></p> <p>An architect as defined in the <i>Architects Act</i>, and a professional engineer as defined in the <i>Professional Engineers Act</i>, contravenes this Act if, as a result of his or her advice that is given or his or her certification required under this Act that is made negligently or incompletely, a worker is endangered.</p>
<i>The Health and Safety at Work Act 1974 (UK)</i>	<p><b>Section 6</b></p> <p>It shall be the duty of any person who designs, manufactures, imports or supplies any article for use at work or any article of fairground equipment –</p> <ul style="list-style-type: none"> <li>• to ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to health when it is being set, used, cleaned or maintained by a person at work;</li> <li>• to carry out or arrange for the carrying out of such testing and examination as may be necessary for the performance of the duty imposed on him by the preceding paragraph;</li> <li>• to take such steps as are necessary to secure that persons supplied by that person with the article are provided with adequate information about the use for which the article is designed or has been tested and about any conditions necessary to ensure that it will be safe and without risks to health at all such times as are mentioned in paragraph (a) above and when it is being dismantled or disposed of;</li> <li>• to take such steps as are necessary to secure, so far as is reasonably practicable, that persons so supplied are provided with all such revisions of information provided to them by virtue of the preceding paragraph as are necessary by reason of its becoming known that anything gives rise to a serious risk to health or safety.</li> </ul>

The European construction arrangements (referred to above) are unusual in recognising the role of the recipient of designed-goods (that is, the client for a construction project). The client or customer can give specific directions, impose particular requirements, including in contracts and tender documents, which may drive or constrain consideration of OHS matters. On the one hand they may have a positive influence on safe design if they require those supplying to them to address OHS. On the other hand their actions and expectations may discourage attention to OHS matters, or preclude this through time or budgetary constraints.

In the Australian OHS statutes there is no obligation on any party to specify OHS requirements in procurement. Arguably employers or self-employed persons would facilitate compliance with their duties of care by requiring that items procured meet OHS requirements. However, there is no obligation to do so. Consideration could be given to establishing a procurement duty as a stimulus for safe design. However, it is noted that there are also different dynamics in supplier/procurer relationships. For example, a franchisee is likely to have limited bargaining power with a franchisor, as is a small customer, especially if the product purchased is one of a mass produced series. On the other hand a major client or customer can have significant influence on a supplier. Thus control is a factor in the supply relationship and the balance of where control lies varies considerably. This has an impact upon whether a procurement duty is appropriate, and in what circumstances.

The Finnish *Occupational Safety and Health Act 1958*<sup>27</sup> establishes a broad duty on the employer in relation addressing a wide range of OHS matters when plans are made. Although not a duty in relation to procurement as such, arguably compliance with the duty would require the employer to specify OHS requirements in relevant plans, designs, tender documents and contracts. The duty is presented in Table 11.

**Table 11: Duty of Employer to Address OHS in Plans (Finland)**

<p>(1) When planning the structures of the working environment, work premises, work processes and production methods as well as the machines and equipment to be used, it shall be made sure that the work can be carried out safely and without exposing the worker to physical or psychic health hazards.</p> <p>(2) When the work premises are planned, built or modified, it has to be made sure that their cubic space, ventilation, lighting, noise level and other circumstances conform to the requirements imposed by this Act. Special attention shall be paid to the fact that the interior layout and the arrangement of the machines and installations make it possible to work safely.</p> <p>(3) In connection with the planning of production and working methods, it has to be established what effects they have on occupational safety. The various tasks and stages of work shall be timed and synchronised in such a way that they can be performed safely.</p>
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<sup>27</sup> The relevant provisions arise from amendment 27/1987.

### **Progressive Summary - Responsibility for Safe Design**

There are different approaches taken to the assignment of responsibility within OHS law (in Australia and overseas) and across different areas of law. Some statutes place generic duties across a range of parties, others place particular duties on specific parties. Some alternatives for further consideration are set out below:

- (1) the same duty is assigned to any person responsible for procurement, design, manufacture, construction, import, supply, installation, erection, commissioning (as appropriate to each designed product) – the rationale with this approach is to require that OHS is addressed as far as practicable, and to the extent of the person's control, at each phase before the designed-product is placed on the market, put into service or otherwise implemented (according to the product)<sup>28</sup>;
- (2) a duty is placed on any person responsible for a specific phase and the nature of the duty varies according to the phase – the rationale with this approach is to place greater responsibility for design-type activities on those who design and make; and greater responsibility for supply-type activities on those who supply.

In general OHS statutory duties include a broad requirement to ensure that the designed-product (that is the focus of the duty) is safe and without risks to health. This is sometimes qualified (for example by practicability) as relevant to the jurisdiction. There may also be specific processes or actions required as part of the duty. These processes and actions are discussed further below. We return to the qualification of duties in Section 12.12.

## **12.4 Systematic Processes for Safe Design**

### **12.4.1 Risk management**

The Australian OHS statutes and regulations have been progressively reformed in recent years to replace prescriptive specification provisions with broader process-based standards (Gunningham et al, 2000: 59). Core processes are those of hazard identification, risk assessment and risk control (applying a recognised hierarchy of control measures) and a feedback loop to monitor and review controls to ensure they are effective. These processes are appropriate when the desired OHS outcome cannot be clearly specified (for example because of technological diversity) but the process provides a means to pursue better OHS outcomes regardless of the technology (Gunningham et al, 2000: 60). The application of a hierarchy of control measures is particularly relevant to safe design activities as it emphasises designing out hazards at the source and designing in safeguards when a hazard cannot be eliminated. The

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<sup>28</sup> Practicable, reasonably practicable, reasonable precautions and proper diligence (as for the jurisdiction)

control hierarchy gives preference to elimination, substitution and engineering controls. For upstream duty holders this will require the elimination or control of hazards at the source, rather than relying upon hazard warnings or instructions emphasising safe behaviour or the use of personal protective equipment (PPE).

Hazard identification should seek to identify a comprehensive range of hazards or problems that might arise with the designed-product. For example, there is more to machinery safety than mechanical or electrical safety, and more to the safety of construction projects than prevention of falls from heights (even though these matters are vitally important). The point is that safe design demands comprehensive hazard identification as relevant to the designed-product. A requirement for the process of hazard identification can help to encourage a systematic approach but definition of performance outcomes can help to ensure this is comprehensive. Section 12.5 below discusses how performance-outcome provisions can be used in the regulatory framework to support the integration of safety at the design stage, by drawing the attention of those responsible to a range of hazards and problems to be considered for particular designed-products.

When designing, manufacturing or constructing, those responsible will need to consider foreseeable risks. This is the expectation under common law (refer to Section 2.3 for a discussion of the common law principles of negligence). This involves consideration of uses that could be reasonably expected. Such uses certainly include the activities of those who will work with the designed-product during its manufacture or construction; those involved in its erection, installation, commissioning or set up; those involved in transport or storage; those who will use, handle or otherwise work with it as end users, once it is produced; and those involved in ongoing cleaning, maintenance, repair or adjustment; and those responding to a failure, breakdown or blockage. In other words, this is a life cycle approach to the management of risks (in which the specific phases will depend upon the specific designed-product).

Thus, risk management is a well recognised process in Australian OHS law that is now incorporated into the OHS statute or OHS regulations in all jurisdictions. However, integration of safe design may be facilitated by the support of performance-outcome provisions that identify relevant hazards to be addressed for different designed-products. A life-cycle approach helps to focus attention on foreseeable risks in the use that can be reasonably expected for the designed-product.

A safe design approach to risk control involves addressing the risks identified for the particular designed-product and then designing, manufacturing or constructing to eliminate risks as far as practicable, or to control residual risks so that the designed-product is inherently safe. Control strategies might involve substitution, modification of design, isolation or use of engineering controls. These are then supplemented by provision of information about the designed-product (see Section 12.4.3 below), specifying any competencies required for those who will work with the designed-product, and identifying any personal protective clothing or equipment required.



## **12.4 Testing and examination for safe design**

Testing, examination and other forms of evaluation such as product trials and user testing are the means by which residual hazards in a designed-product are determined. The type of "testing" regime depends both on the type of designed-product but also on the particular product. It is therefore difficult for legislation to be precise about the form of testing required. Nevertheless, a general requirement to ensure that testing is performed is part of the statutory duty of care of manufacturers, importers and suppliers of plant and substances in most jurisdictions, and also part of the duty of care of those who design plant and substances in some jurisdictions (see Sections 3.6 and 11.2 for further discussion of these provisions). It is not expected that the responsible persons undertake the testing themselves, they simply need to ensure that it has been done. For example, an importer or supplier might access information from the manufacturer.

While it is difficult for legislation to be more explicit than to establish a requirement to ensure that adequate or sufficient testing is performed, procedures for testing and examination may be included in technical design standards (published by Standards Australia and other standards bodies). These standards may be approved as evidentiary standards. Alternatively, technical standards may be referenced in regulations to establish mandatory requirements, if required. This approach is relevant to plant, and to buildings and structures. Technical standards are already applied in the regulatory framework (see Sections 3.6 and 3.8 in relation to plant, Section 8.2 in relation to buildings, and further discussion of evidentiary standards in Section 12.6 below).

As discussed in Section 11 of the report, there are criteria applied in Australia for the classification of workplace hazardous substances and dangerous goods (NOHSC, 1999a and Federal Office of Road Transport, 1998). In order to classify the hazards of a substance, testing is necessary to determine its toxicological and physico-chemical properties. There are international developments to adopt a globally harmonised system (GHS) for technical assessment and hazard classification (NICNAS, 2001b).

Thus, testing and evaluation is an important process to identify residual hazards of a designed-product. Upstream parties, from designers through to suppliers, may have a role in ensuring that designed-products are tested and examined, as appropriate to the product. A requirement for testing and examination may be expressed as a general process requirement. This may be supported by more specific procedures set down in technical standards or criteria documents. There are some existing testing requirements for plant and buildings, and criteria are well developed for substances. In some instances third party technical assessment and/or verification of design is an appropriate strategy. This is discussed further in Section 12.9 below.

### **12.4.3 Information provision**

A third core process for safe design is the provision of comprehensive information to those who will work with the designed-product. As discussed in Section 12.3 above, this will vary for the particular product but might include those involved in erection, installation, commissioning or set up; those involved in transport or storage; those who will use, handle or otherwise work with it as end users, once it is produced; and

those involved in ongoing cleaning, maintenance, repair or adjustment; and those responding to a failure, breakdown or blockage.

The specific form of information provision will vary according to the type of product. The “safety and health file” envisaged by the European *Construction Site Directive* provides a mechanism to bring together relevant information about the design and features of a building and construction project, and pass this information from the planning/design phase, to the construction phase, and on to the client for application in end use and occupancy. (Refer to Section 9.5.3 of the report for more discussion on the OHS file). An important finding from implementation of the *Construction Site Directive* is the value in setting down the type of information to be included in the OHS file, to maximise its value. This is an area where an evidentiary standard could be developed to describe the contents of an OHS file.

In regard to business system franchises there is no existing mechanism for a franchisor to inform a franchisee of OHS matters relevant to the business system. The OHS file discussed above might also have application here.

Product safety information for substances is well developed. The recognised mechanisms are labels and material safety data sheets, and there are national model codes of practice for each of these (see Sections 11.3 and 11.4 for a discussion of these matters).

For plant it is common practice for manufacturers to produce either warning labels or notices that are attached to plant and/or an operation manual, which may include OHS information. The scope and quality of this information is variable. All of the Australian OHS statutes require manufacturers, importers and suppliers of plant to provide information (and most establish the same duty on designers). Some direction, about the scope of plant safety information and its presentation could be provided in the form of an evidentiary standard (similar to the *National Model Code of Practice for the Preparation of Material Safety Data Sheets*, NOHSC, 1994d).

The essential requirements of the European *Machinery Directive* (as discussed in Sections 4.5 and 4.9) establish that instructions must accompany each machine and include foreseen use, safe installation, putting into service, use, handling, assembly, dismantling, adjustment; maintenance, noise emission level, requirements to reduce noise and vibration, training, and ways the machinery should not be used. In addition to normal operating conditions, matters that it would be valuable to include are safe procedures when things go wrong (for example machine blockages), cleaning and other activities where exposure to risks may be different from everyday usage. As well as directions for safe use, health and safety information should also caution against uses for which the product was not designed or intended.

Thus, information provision is a core process currently applied to plant and substances in the Australian OHS statutes and regulations. While the provisions for substances are well developed, the provisions for plant are general. An evidentiary standard is one means to clarify expectations in this area. For buildings and construction projects, and for business system franchises it is suggested that the concept of an OHS file that is passed from the planning/design phase to the client or franchisee respectively, could be a useful mechanism transfer relevant OHS information. In each case, the scope of

information to be transferred should be clarified and an evidentiary standard could be a means to achieve this.

### **Progressive Summary - Systematic Processes for Safe Design**

The Australian OHS statutes and regulations have been progressively reformed in recent years to replace prescriptive specification provisions with broader process-based standards.

Three core processes are:

- (1) Risk management is the process of hazard identification, risk assessment and risk control (applying a recognised hierarchy of control measures) and a feedback loop to monitor and review controls to ensure they are effective. For safe design it is crucial that a comprehensive range of hazards are addressed for the particular product, and for relevant phases in which workers may use or encounter the product.
- (2) Testing and examination is the process to determine any residual hazards using tests, trials or other examination as appropriate to the particular product.
- (3) Information provision is the process by which those who will work with the product are comprehensively informed about the risks involved, risk control measures and specific training requirements. The specific form of information provision will vary according to the type of product. Different forms are product safety data sheets or manuals, labels, and health and safety files.

As core processes for managing safe design it is appropriate to consider incorporating all of these systematic processes in the OHS statutes.

For each of these core processes it is important to guide and focus the activities of those involved in safe design by defining OHS performance outcomes and/or providing guidance in the form of evidentiary standards. These strategies are discussed below in Section 12.5 and 12.6.

## **12.5 Performance Outcomes for Safe Design**

While a risk management process provides a broad framework for identifying hazards and controlling risks, it is crucial that decision makers are clear about the OHS outcomes to be achieved. Weaknesses in risk management can arise from failure to recognise the range of hazards that may be associated with a designed-product. Those undertaking risk management, whether they are design professionals or not, are not necessarily familiar with the OHS hazards or problems for the product. Designers may have considerable technical knowledge but are more accustomed to designing for form and function rather than OHS aspects.

Various mechanisms may be used to provide some direction. One approach is to identify requirements in OHS regulations. These establish mandatory requirements and in their current form typically address a range of hazards. However, they usually frame the relevant provisions as responsibilities of employers (and sometimes workers). Thus some direction is provided about a range of hazards to be addressed but with a focus on the role of employers (and workers).

There are some examples of OHS Acts or regulations that identify a more comprehensive range of OHS matters to be addressed by upstream parties. One example is the South Australian *OHSW Regulations 1995* (refer to Section 7.2.3 for a discussion of this). Schedules to these regulations (refer to Appendix 4) identify how different parties are responsible for addressing different hazards. Thus these regulations have a wider focus on upstream parties than the usual employer/worker focus of OHS regulations.

There are also examples of Australian evidentiary standards that identify hazards to be addressed with particular designed-products. In particular, the *Plant Advisory Standard* (Qld) and the *Approved Code of Practice – Plant* draw attention to a range of hazards to be addressed for plant. However, none of the Australian examples is as comprehensive as the approach taken by the European *Machinery Directive* and the legislation implementing this directive. The directive emphasises the integration of safety at the design stage, and the need to address OHS hazards in end use, as well as in machinery adjustment, maintenance, assembly and dismantling. The directive does this by laying down “essential health and safety requirements” (presented in Annex I of the directive). The essential health and safety requirements cover matters such as materials and substances; lighting; control systems and devices; emergency and normal stopping; power supply and starting; stability; falling or ejected objects; surfaces and edges; tools; type of guarding and access for installation, maintenance and clearing blockages; electrical hazards and static electricity; hydraulic, pneumatic and other energy sources; extreme temperatures; fire and explosion; vibration; radiation; lasers; emissions; trapping and enclosure; slipping, tripping and falling; access to operating positions; isolation and dissipation of energy sources; cleaning and unblocking; maintenance and operator intervention; warning devices and warning of residual risks. There are also specific requirements for particular types of machinery.

The European essential health and safety requirements for machinery are performance-outcome provisions in that they identify the OHS outcomes required but do not specify how these are to be achieved. (Refer to Section 4.5 for discussion of the essential requirements and Appendix 3 which presents the essential requirements as published in the UK *Design of Machinery (Safety) Regulations 1994*).

A similar approach is taken in the *Building Code of Australia* which supplements risk management processes with “performance requirements” that outline the health and safety outcomes to be met by the design, materials and methods used to construct a building (refer to Section 8.2 for a discussion of this).

Thus, performance-outcome provisions offer the advantage of defining OHS outcomes to be achieved while providing flexibility about how these outcomes are achieved. They help to focus the attention of designers and others on recognised hazards and health and safety problems. The development of performance-outcome

provisions is a safe design initiative that could be pursued for plant and safety components; for buildings, structures and other construction projects; and for business franchising systems. Such performance-outcome provisions would supplement the generic risk management process by providing a set of relevant hazards or problems to be addressed for a particular designed-product.

## **12.6 Evidentiary Standards to Support Safe Design**

It is suggested above in Sections 12.4.2 and 12.4.3 that evidentiary standards are a means of providing guidance about product testing and examination, and about OHS information respectively. In addition, evidentiary standards may provide technical design standards to be used by the safe design parties. Technical standards are already a valued source of guidance for designers and manufacturers (Bluff, 2002; McGregor Tan Research, 2000 and VIOSH, 2000). Extensive use is made of them under the European Union's *Machinery Safety Directive* (see Section 4.11 and Appendix 2) and the *Building Code of Australia* (see Section 8.2).

Standards that deal with technical aspects of design provide one means of complying with the performance outcome requirements. If they have evidentiary status there is the option to apply engineering principles or other strategies to develop alternatives. To promote safe design, there is scope to consider a greater range of evidentiary standards, especially for plant. For example, the European harmonised standards provide guidance on risk assessment for plant, ergonomic aspects of plant, as well as standards for specific types of plant. Some are consistent with standards of the International Organization for Standardization (ISO) designed to minimise "technical barriers to trade" (International Organisation for Standardization (2002)).

## **12.7 Documentation of Safe Design**

Documentation is the means by which safe design parties record action taken to address OHS, in particular in the planning and design, and the manufacture or construction phases (as appropriate to the particular designed-product). Several regulatory regimes use a technical file as the form of documentation.

For example, for new industrial chemicals manufactured in Australia and new imports the NICNAS scheme requires the manufacturer or importer to produce a "technical dossier" which contains all the toxicological data and information required to enable NICNAS as the regulator to assess and classify the chemical substance (NICNAS, 2001a: 5; see also Section 11.5 of this report)

In Europe under legislation implemented to give effect to the *Machinery Directive* the manufacturer maintains a "technical construction file" which must include detailed drawings and calculations, tests and other measures to check conformity with the essential health and safety requirements, a list of the essential requirements addressed how they have been addressed; the details of any harmonised standards used in design; the methods used to eliminate hazards; any technical reports from competent bodies; the health and safety instructions; and the measures used to ensure conformity for machinery manufactured in series (ie multiple items). The file must be presented

in response to a request from the competent national authority of a member state but can remain on the premises of the manufacturer (see also Section 4.7 of this report).

Also in Europe, the *Construction Site Directive* requires that the client or project supervisor ensure that a “safety and health plan” is drawn up (by the planning/design phase project coordinator). Some countries prescribe the contents of the plan and items prescribed include: a general description of the project; the project duration and phasing of work; foreseeable risks to workers in construction; particular risks and activities on the site; drawings and design information; the pre-construction environment; liaison and communication arrangements (see also Section 9.5.3).

Such plans are used by participants in the construction project, including the client, designers and contractors. They also provide a basis for the regulator to evaluate whether, and if so how, OHS matters have been addressed in the planning/design phase. In some countries, Greece and Spain, the OHS plan must be submitted with plans in order to obtain the approval of the building authorities for construction projects.

Thus, a technical file is a mechanism for recording action taken to address OHS matters in the planning/design and the manufacture/construction of designed-products. It can be a useful tool for exchange of safe design information between different parties to a project and for the regulator to assess compliance.

## **12.8 Safe Design Mark**

A safe design mark is a mechanism for signalling action taken to address OHS matters in the planning/design and the manufacture/construction of designed-products. It can be a useful tool to remind those procuring designed-products of safe design requirements. It is also a regulatory tool.

Typically a manufacturer is entitled to apply a safe design mark, such as the European CE mark (see Section 4.8), if s/he has complied with legal requirements for safe design. Application of the mark to a product is a declaration of conformity with essential requirements. Presence of the mark is a pre-condition for the supply of the product.

Thus, absence of a safe design mark signals non-compliance with safe design requirements. This is a form of alert for those procuring that type of product. While the presence of the mark is not a guarantee of safety, in conjunction with a technical construction file (as discussed in Section 12.7 above), it provides a means of evaluating product safety.

In summary, a safe design mark is probably most applicable to plant and machinery. It could have particular value to reinforce the application of safe design requirements to importers and those procuring items of plant. It would be a ready signal and reminder to these parties of the need to comply with safe design requirements.

## 12.9 Technical Assessment or Design Verification

As discussed above (Section 12.7) industrial chemicals that are to be manufactured in Australia or imported into the country for the first time require scientific assessment on the basis of a technical file under the NICNAS scheme (NICNAS, 2001a). This is a national scheme and internationally recognised criteria are used for the technical assessment.

In both Europe and in Australia certain prescribed items of high risk plant require third party verification of the design by a competent authority. In Europe this is the EC-type examination which is undertaken by a notified body that meets particular requirements of independence and technical competence (see also Section 4.6). In Australia this is the process of design verification. The design verifier evaluates whether the plant complies with designated design standards. This verification is the basis for registration of the design with the regulator. However, as discussed in Section 3.8 there is some variation in the range of plant requiring design verification, the use of technical design standards (or engineering principles) and the criteria for the design verifier.

It is recommended that design verification be established as a nationally consistent requirement, for the same designated items of plant, with a recognised set of technical design standards and an independent design verifier. Independence means that the design verifier must not have any involvement in the design of the plant, and the designer and design verifier must not be employed or engaged by the same person unless a quality system is used to undertake the design and that system is certified by a body accredited or approved by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ). This was the system envisaged by the *National Standard for Plant* (NOHSC, 1994a: cl 69 and 70). Review of the design verification requirements for plant would provide an opportunity to reconsider the high risk items of plant that warrant verification. In this regard it is noteworthy that the items requiring third party assessment in Europe are quite different types of plant (for examples some types of saws and presses, as compared to lifts, cranes and other large mobile plant; see also Section 4.6.1).

In addition to technical assessment by the regulator or a competent third party for some new industrial chemicals (and priority existing ones) and some high risk plant, it is pertinent to consider whether such an assessment is appropriate for some construction projects. Some European countries require presentation of the OHS plan for a construction project to be presented at the time of building approval so that OHS aspects of plans are assessed along with other building planning documentation (see also Section 9.5.3).

In summary, assessment by the regulator or a competent third party is a mechanism to ensure that specified items receive special attention. It is appropriate that such mechanisms be applied to designed-products presenting particular risks. There is scope to review current arrangements for high risk plant, and to consider the application of a mechanism to verify the OHS aspects of the design of construction projects which present particular risks.

## 12.10 Notification of Certain Designed-Products

The process outlined above for assessment and/or registration by a regulator also notifies those designed-products to the regulator. For industrial chemicals in Australia there is also a register of existing industrial chemicals and annual registration of companies which import or manufacture certain industrial chemicals above prescribed threshold amounts (NICNAS, 2001a: 6; see also Section 11.5 of this report). This kind of information (including manufactured and imported products) allows strategic oversight of industrial chemical usage in Australia.

There is scope to consider whether further notification is worthwhile, for any of the other designed-products. For plant in Australia, high risk plant requiring registration is known to regulators. For construction projects in Europe notification is required if they are of a certain size. Table 12 presents a duty under the Norwegian *Worker Protection and Work Environment Act 1977*, which requires prior consent from the Labour Inspection Authority for building projects that may be used as workplaces.

**Table 12: Consent for Building Projects in Norway**

<i>Worker Protection and Work Environment Act 1977 (Norway)</i> <u>Section 19</u> Any person wishing to erect a building or perform building work that must be reported or for which an application must be submitted pursuant to the current <i>Planning and Building Act</i> and that will or may foreseeably be used by an establishment subject to this Act shall obtain prior consent from the Labour Inspection Authority.
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If notification is to be useful, it needs to be made in sufficient time to enable the relevant OHS authority to evaluate attention to OHS in the planning/design phase (see also Sections 9.5.4 and 9.9).

## 12.11 OHS Training and Competency for Safe Design

The NOHSC Safe Design Action Plan (NOHSC, 2002b) identifies the development of OHS knowledge of design professionals as a priority action. There is scope to consider whether there are particular OHS competencies required for those responsible for implementing the safe design provisions of OHS regulation. In the European Union the *Construction Site Directive* requires appointment of coordinators in the design phase of construction projects. However, without OHS knowledge and experience they were not able to influence decisions and action about OHS in the planning/design phase. Section 9.9 presents a discussion of how the issue of OHS competency has been addressed in Europe in relation to construction and some suggestions for mandatory training and competency assessment to include to develop particular OHS knowledge, risk management and communication skills. Thus, there is scope to consider whether: (1) there is a need to define OHS competencies for those involved in safe design functions; (2) competencies should be mandatory for those involved in projects involving significant risks or a design/production scale with the potential to have a wide impact.



### Progressive Summary – Elements of Regulation for Safe Design

While systematic processes provide a broad framework for managing safe design, they can leave even designers with professional expertise uncertain about what is expected. Two key strategies may be used to provide some direction to those responsible for safe design functions but maintain flexibility. The first is to use performance-outcome provisions to define the OHS outcome to be achieved while leaving open the means for achieving this. The second is to use evidentiary standards that describe acceptable methods or ways of achieving OHS outcomes. Key examples are the European Union's "essential health and safety requirements" and the European harmonised standards for machinery safety (as discussed in Section 4 of this report). A similar approach is taken in the *Building Code of Australia*, which supplements risk management processes with "performance requirements" that outline the health and safety outcomes to be met by the design, materials and methods used to construct a building (refer to Section 8.2 for a discussion of this).

Other strategies that might be incorporated in a regulatory regime for safe design of particular designed-products are:

- Documentation to record action taken to address OHS, in particular in planning, design, manufacture and construction phases. A **technical file** for a product, or an **OHS plan**, can provide a basis for evaluating the safety of a product as well as communication with key clients.
- Application of a **safe design mark** and **declaration of conformity** to signal that action has been taken to address OHS matters in the planning/design and the manufacture/construction of designed-products.
- **Technical assessment** or **design verification** is a means of ensuring that OHS matters have been addressed with high risk products before they are placed on the market. This may be performed by the regulator or by an independent and technically competent third party. Technical standards may be used as a benchmark for the technical assessment or design verification. In this event it is crucial that there is a nationally consistent, recognised set of technical standards.
- **Notification** is a process of alerting relevant authorities to particular designed-products to enable strategic oversight of these products. Notification in research and development, planning and design phases enables authorities to have input while decisions are being made that impact on safe design.
- Development of **OHS competencies** for safe design is a strategy to ensure that those involved in safe design functions are equipped with relevant OHS knowledge and skills. There is scope to consider defining a set of core competencies for safe design, for each designed-product, and to consider establishing these competencies as mandatory for persons involved in projects involving significant risks or a widespread impact.

## 12.2 Qualification of Safe Design Duties

In Australian OHS legislation, the duties are qualified by the expression "so far as reasonably practicable" ("practicable" or "take reasonable precautions and exercise proper diligence" in some jurisdictions). This concept is also widely used in OHS regulations, approved codes of practice and advisory standards. It strongly resembles the common law calculus of negligence (as discussed in Section 2.3). It is a means of weighing up, on the one hand, the risk of illness or injury occurring against, on the other hand, the sacrifice involved in the measures to remove the risk (taking into account technological feasibility, cost etc).

Recently the High Court considered the meaning of "reasonably practicable" in *Slivak v Lurgi (Australia) Pty Ltd* [2001] 205 CLR 304. The court confirmed that "to determine what is 'reasonably practicable' it is necessary to balance the likelihood of the risk occurring against the cost, time and trouble necessary to avert that risk (205 CLR: 322-323). Moreover, a person can only be held responsible for matters that are within his/her power to perform or check. A designer cannot be expected to take account of factors outside his/her power to control, supervise or manage (205 CLR: 319).

While it is important to note that the Queensland *Workplace Health and Safety Act 1995* takes a somewhat different approach, it nonetheless qualifies the duties of care. This Act requires the responsible person to comply with the provisions of regulations, ministerial notices, advisory standards or industry codes of practice, or if there are none of these, to take "reasonable precautions" and to "exercise proper diligence". It is accepted that the expression "reasonable precautions" means that hazards are identified, risks are assessed, control measures are determined and implemented to prevent or minimise the risk, and "proper diligence" means that the effectiveness of control measures is monitored and reviewed (WHS Act (Qld) ss 22 and 37).

The qualification of "practicability", as framed in the OHS statute for each jurisdiction, provides the necessary qualification of duties in relation to safe design (whether expressed in the OHS statutes, regulations or evidentiary standards). There is no need for additional qualification.

Indeed the additional qualification of "when properly used" that is currently incorporated in the Australian OHS statutes, in relation to upstream duties concerning plant and substances, is a confusing and potentially dangerous expression. It can lead to a belief on the part of a designer, manufacturer or other supplier that it is reasonable to rely upon directions about proper use, whether or not these are realistic in the circumstances of work. Readers will also note that the expression "when properly used" is not in the common law (refer to Section 2.3). Retaining "when properly used" in the OHS legislation may well give duty holders a false sense that they can draw on "when properly used" as a defence, which is misleading in view of the direction that legal action may take following the *Arbor Products* prosecution (as reported in Section 3.4).

The expression "when properly used" should be removed from the OHS statutes and subordinate legislation, in the interests both of ensuring inherently safe design, and to avoid conflict with common law principles of negligence. This approach is also consistent with that taken in the European Union, in relation to machinery. The Machinery Safety Directive, expects the responsible parties, to design and manufacture machinery to be inherently safe, and when designing and constructing machinery, and when drafting safety instructions, to envisage uses which could reasonably be expected.

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## Conclusion - Principles and Elements of Regulation for Safe Design

In Part Five we outlined some principles and elements to be considered in developing possible future directions of regulation to promote safe design. It is likely that different designed-products will require somewhat different regulatory approaches. Nonetheless, it is suggested that the application of the different principles and elements be considered in relation to each of the four key designed-products. They might also be applied to other designed-products that have not been the specific focus of this report.

First, we discussed the principle of national consistency. It is suggested that this takes on a new importance in relation to safe design as designed-products are supplied across jurisdictional borders, within Australia and overseas. It is not possible to have an effective regulatory regime for safe design that is based on different requirements in each jurisdiction. There is a challenge to achieve national consistency in safe design regulation in a way that has not been achieved to date. To this end, in Part Five we have canvassed some different possibilities for achieving a nationally consistent regulatory regime. Those discussed are: (1) template OHS legislation adopted in an identical form by each jurisdiction; (2) national OHS legislation adopted by the Commonwealth government using a relevant Constitutional "head of power"; (3) integration of OHS requirements for safe design into other national or nationally coordinated regulatory regimes - the *Building Code of Australia* and *NICNAS* are regulatory regimes canvassed for safe design aspects of buildings safety and workplace substances respectively.

Second, we discussed approaches to designating responsibility for safe design. There are different approaches taken to the assignment of responsibility within OHS law (in Australia and overseas) and across different areas of law. Some regimes place generic duties across a range of parties, others place particular duties on specific parties. It is possible to assign the same duties to any person responsible for procurement, design, manufacture, construction, import, supply, installation, erection, commissioning (as appropriate to each designed-product), requiring OHS is addressed as far as practicable, and to the extent of the person's control, at each phase before the designed-product is placed on the market, put into service or otherwise implemented. Alternatively, duties may vary according to the phase, thus a person who designs might have different duties to a person who supplies.

Third, we discussed three core processes for systematic management of safe design. These are the processes of risk management, testing and examination, and information provision. For each of these core processes it is important to guide and focus the activities of those involved in safe design by defining OHS performance outcomes and/or providing guidance in the form of evidentiary standards.

Performance-outcome provisions define OHS outcomes to be achieved while leaving open the means for achieving them. Evidentiary standards, including technical standards, describe acceptable methods or ways of achieving OHS outcomes. Australian OHS legislation has tended to make limited use of these strategies with the result that responsible parties may be uncertain about what is expected of them. Systematic processes, while encouraging the management of safe design functions

can be vague to those not experienced in OHS. Examples were presented throughout the report, and are also included in the Appendices, of how performance-outcome provisions and evidentiary standards can be used to provide direction while retaining flexibility.

Further to this we canvassed some other elements that might be incorporated in a regulatory regime for safe design, as appropriate to particular designed-products. These elements are forms of documentation to record action taken to address OHS (by technical files and OHS plans); application of a safe design mark and declaration of conformity to signal that action has been taken to address OHS matters; technical assessment or design verification as a means of ensuring that OHS matters have been addressed with high risk products before they are placed on the market. This requires the involvement of independent and technically competent persons and agreed technical criteria or standards. We also discussed the role of timely notification as a process of alerting relevant authorities to particular designed-products to enable a strategic response, and the relevance of OHS competencies for safe design as a strategy to ensure that those involved in safe design functions are equipped with relevant OHS knowledge and skills.

Finally, we discussed the qualification of duties in regulation for safe design. The qualification of practicability (as framed in each jurisdiction) provides the necessary qualification and is consistent with the common law principles of negligence, which are also applicable to upstream parties. The additional qualification "when properly used" should not be included in safe design regulation as it gives a false impression about reliance on warnings rather than ensuring that a designed-product is inherently safe, as far as "practicable".

In conclusion, there are a range of possible futures for regulation to promote safe design. The regulatory regimes reviewed in this report provide considerable food for thought. The key principles and elements canvassed in this Part of the report are designed to give some focus to discussion of those possible futures.

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## **PART SIX**

### **Strategic Enforcement of Safe Design**

Part Six of the report discusses current strategies and practices for enforcement by the Australian OHS inspectorates. Some guiding principles and a range of strategies and sanctions are canvassed as possible constituents of future enforcement policy tailored to safe design.

## **13. Current Approach to Compliance and Enforcement Under the OHS Statutes**

### **13.1. Scope of Enforceable Duties**

As outlined in Parts Two to Four of this report, the Australian OHS statutes establish duties on upstream parties principally in relation plant and substances. Only the OHS statutes in South Australia and Western Australia establish a duty of care for designers of buildings and structures. No jurisdiction establishes a clear duty of care for franchisors, although in some jurisdictions some of the duties of care may apply to franchisors. In particular, those that might apply are: the duty of the employer or self-employed person to others under OHSA (Vic) and WHSA (Qld); the duty of a person in control of premises used as a workplace under OHSA (NSW) and OSHA (WA); the duty of a person who designs a building used as a workplace under OHSWA (SA) and OSHA (WA); and the duties of persons who supply plant or substances under all of the OHS statutes. Thus, any contact between OHS inspectors and upstream duty holders under the current OHS statutes, is likely to occur principally in relation to plant and substances.

### **13.2 Proactive Projects, Persuasion and Guidance**

Some OHS inspectorates have targeted upstream duty holders. For example, the SA inspectorate undertook the *Safer at the Source (Plant)* project where direct contact was made with machinery suppliers advising of duties under OHSWR (SA) and the hazard management process (Workplace Services, 2001). A number of proactive industry projects have been undertaken by OHS authorities and some of these include elements relevant to safe design issues (see Cowley et al 2000: 17- 22 for examples of these preventive programs).

OHS authorities may produce guidance material including advice about the duties in relation to design, manufacture/construction, import and supply. Such information is usually accessible via the internet and inspectors may advise on available sources of information. Although advice and guidance is part of encouraging compliance (see for example Victorian WorkCover Authority, 2002), there has been a move away from more specific advice and "approval", such as confirming whether specific plant complies with legislation.

### **13.3 Inspection and Investigation**

As well as some proactive projects, the day-to-day work of OHS inspectors primarily involves inspections and investigations. Inspectors have a range of powers as defined in the OHS statutes. In all jurisdictions they have general powers of entry to premises, powers to investigate and have access to records and other documentation. These powers may be applied to enforcement of safe design duties (see for example Victorian WorkCover Authority, 2002).



Inspections may be conducted on an ad hoc basis (for example in response to a complaint) or they may be targeted. The basis for targeting is often industries or organisations with higher rates of workers compensation claims (poor performance), common injury types or hazards, or fatalities. With the principal focus being "workplace" health and safety, the emphasis (especially with limited inspectorate resources) may tend to be immediate matters concerning the roles of employers and workers, rather than problems that arise "outside the workplace" (or at least in another workplace) with a designer, manufacturer, supplier, importer or other upstream party. However, in the process of inspection, problems may be identified relating to unsafe design where upstream parties have contributed. Thus safe design issues may be highlighted and raised with the upstream duty holder(s) or in some cases, where the problem concerns a class of product, rather than a particular model or batch, a "hazard alert" may be generated and circulated to those concerned (Cowley et al, 2000: 15).

Investigations are generally carried out when a significant incident occurs involving a fatality, serious injury or another high risk situation (which may not involve injury) such as collapse of excavations, failure or overturning of high risk plant, collapse of walls or ceilings of a building used as a workplace. Here too the process of investigation may identify problems relating to unsafe design or construction and the matter may be addressed with the upstream duty holder and hazard alerts may be generated (see for example Victorian WorkCover Authority, 2002).

### **13.4 Inspectors' Notices**

Inspectors have a range of tools that they may use in enforcement. The OHS statutes in all jurisdictions provide for an inspector to issue an improvement notice if the inspector believes that a person is contravening or has contravened a provision of the Act (or regulations) in circumstances that make it likely the contravention will continue or be repeated.<sup>29</sup> The notice is a formal direction to require that the contravention be remedied. While a notice is sometimes perceived as punitive, in fact, it is giving the duty holder a further opportunity to comply (Victorian WorkCover Authority, 2002: 12). However, failure to comply with a notice is an offence and may be prosecuted.

Some OHS statutes provide for an improvement notice to be issued to any "person" responsible for a contravention. In these jurisdictions an improvement notice could be issued to a designer, manufacturer, importer or supplier. However, in a few jurisdictions notices are served on the "employer". In this case an improvement notice could not be used with an upstream duty holder. (In Section 14, possible amendment of provisions relating to improvement notices is discussed).

Provision is also made in all jurisdictions for an inspector to direct that a work activity cease if the inspector believes that there is or is likely to be, an immediate risk to health and safety (or an imminent and serious risk, see for example OSHA (WA): s

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<sup>29</sup> Under WHSA (Tas) s 38(1) this is not called an improvement notice but the effect is the same; that is, being able to direct that steps are taken to remedy or alleviate circumstances in which a person's health and safety is endangered.

49).<sup>30</sup> Arguably, it could be difficult to use a prohibition notice for safe design duties as, by the time there is an immediate/imminent risk to health and safety, the activities (unsafe design or construction) giving rise to it are already completed. However where, for example, a manufacturer continues to produce an unsafe product, a direction could be given for this activity to cease. The wording of some OHS statutes could further limit the use of prohibition notices for safe design duties. For example, OHSA (ACT): s 77(1) provides that a prohibition notice may be issued where there is "a risk of imminent and serious injury to a person *at or near the workplace*" (italics added) In OHS(CE)A (Cwlth): s 46 a prohibition notice is only issued *to an employer* (italics added). (Possible amendment of provisions relating to prohibition notices is canvassed in the Section 14).

Infringement or penalty notices ("on the spot fines") can be issued by inspectors in some jurisdictions if it appears that an offence has been committed (see for example OHSA (NSW): s 108). Payment of the notice within the time allowed prevents the matter being dealt with in court, and is not an admission of liability for other legal action. A conviction is not recorded. Schedule 2 of the NSW regulations OHSR (NSW) presents a list of offences for which a penalty notice can be issued. It includes some safe design duties. Infringement notices are also provided for in the OHS statutes in Queensland, the ACT and NT, and are proposed in Tasmania.

### 13.5 Prosecution and Penalties

Proceedings may be initiated against a duty holder for breach of a duty under the OHS statutes or regulations. However, matters relating to unsafe design and construction, or the condition of a product, may only become apparent some time after the item has been supplied and used. There are practical difficulties investigating such a breach, in regard to the collection of evidence. There are also legal impediments created by the limitation period for bringing action in most jurisdictions which is in most cases either two or three years from the date the alleged offence was committed. Under OHSA (NSW): s 107, proceedings must normally be brought within two years after the breach but an extension of time is allowed for duties of designers, manufacturers and suppliers of plant and substances for use at work. In these cases proceedings may be instituted "within 6 months after WorkCover first becomes aware of the act or omission alleged to constitute the offence" or within 2 years of the alleged offence, whichever provides the longer period to institute proceedings.

In the event that a prosecution is successful, the penalties established under the OHS statutes vary quite widely. The highest penalties available are in NSW where the penalty for a first offence is up to \$550,000 for a corporation or \$55,000 for an individual (or up to \$825,000 for a corporation and \$82,500 for an individual, for a second offence). Under OHSA (NSW): s115 the court can also order publicity or notification of persons about the offence, or that an offender undertake specified projects for the general improvement of OHS (OHSA (NSW): s 116). Publicising the outcomes of successful prosecutions is also a strategy used by OHS authorities generally, as a deterrent to others.

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<sup>30</sup> Under WHSA (Tas) s 38(2) and (3) this is not called a prohibition notice but the effect is the same of being able to direct that an activity cease if urgent and immediate action is required to alleviate or remedy the situation.

There have been very few prosecutions in relation to upstream duties. A rare example of a successful prosecution is *WorkCover Authority of New South Wales (Inspector Mulder) v Arbor Products International (Australia) Pty Ltd* [2001], 105 IR 81. *Arbor Products* was prosecuted for failing to ensure the safety of a wood chipping machine supplied by them. There were also some unsuccessful Victorian prosecutions for supply of unsafe plant. (See Section 3.4 for summaries of *Herless Pty Ltd v Barnes* [1986] and *Victorian WorkCover Authority v Chem-Mak Pty Ltd* [1999], as well as the *Arbor Products* case).<sup>31</sup> In *WorkCover Authority of New South Wales (Inspector Tucknott) v Walders Goodtime Pty Ltd* (2001) NSWIR Comm 94 the supplier of a temporary public seating stand, which collapsed with 50 people seated in it, was prosecuted and fined \$40,000 for failing to ensure that the plant was safe and without risks to health when properly used. A further example of a successful prosecution is *WorkCover Authority of NSW (Inspector Ankusic) v McDonald's Australia Ltd* (1999) 95 IR 383. The case involved a fatality at a McDonald's franchise. However, the prosecution was not pursued in relation to the design of the business franchising system (as discussed in Section 10.2, no such duty exists). Rather, McDonald's Australia was prosecuted as the person who has control of plant used at a workplace and a subsidiary of McDonald's Australia Ltd, McDonald's Properties Pty Ltd was prosecuted as a person who has control of premises used as a workplace (see Section 10.2 for discussion of this case).

The expression "when properly used" has given rise to some different interpretations of upstream duties of care, as discussed in Section 3.4. However, the *Arbor Products* case suggests that in the future the courts will expect designers, manufacturers, importers and suppliers to ensure that plant is safe and without risks to health, rather than relying on warnings or instructions about "proper use" for plant that is not safe per se.

### 13.6 Refusal to Register Design

As discussed in Part Two of this report, the Australian OHS statutes and regulations require that the design of some high risk items of plant be verified and that the design be registered. Such high risk plant cannot be supplied and used unless the design is registered with the relevant OHS authority. Thus refusal to register a plant design, in the event that it does not comply with prescribed standards is a further enforcement mechanism relevant to safe design.

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<sup>31</sup> The unreported cases are *Herless Pty Ltd v Barnes* (unreported, Industrial Relations Commission of Victoria in Court Session, Garlick, Case No 12/1986, 26 September, 1986 and *Victorian WorkCover Authority v Chem-Mak Pty Ltd* (unreported, Industrial Relations Commission of Victoria in Court Session, O'Shea, 10 September, 1999).

### **Progressive Summary - Current Approaches to Enforcement**

There are various strategies and mechanisms that Australian OHS inspectors currently use to encourage compliance with OHS legislation and to enforce compliance when needed. These include: persuasion and guidance (provided in person, through print information or online); inspection (ad hoc and targeted); investigation (usually of more significant incidents); issue of notices (improvement, prohibition or penalty notices); and prosecution with the imposition of a financial penalty by the courts or a court order (NSW only); and refusal to register design, for high risk plant that does not meet design verification requirements.

In practice there is limited focus on the safe design duties. In part this is due to a tendency, especially in the context of limited enforcement resources, to focus on OHS problems "in the workplace" with those immediately concerned, the employer and the workforce. However, there are also aspects of legislative provisions that limit the capacity to enforce upstream duties, including the wording of improvement and prohibition notices under some OHS statutes and the statute of limitations in regard to the timeframe for prosecutions.

Of course, there is also the over-riding limitation that it is really only plant and substances that are regulated in relation to upstream duties with minimal provisions for buildings or structures, and for business franchising systems (as discussed in Sections 7 and 10.1 respectively). Principles and elements for future regulation of safe design in relation to a wider range of designed-products were canvassed in Part Five of this report.

## 14. Options for Reform of Enforcement

### 14.1 A Nationally Consistent, Strategic and Responsive Approach

In this section we canvass options for future enforcement of safe design, outlining some principles to guide enforcement of safe design matters and some possible elements of enforcement policy. In this regard it is important to note the 'Principles and Elements for Regulating Safe Design', canvassed in Part Five of this report, as these provide a basis for considering future regulation in this area. In this regard, future enforcement of safe design will ultimately be influenced by the nature of regulatory provisions and the jurisdiction in which they are made. Thus the possible principles and elements of an enforcement policy discussed in this section will need to be considered in light of any proposals for law reform. Nonetheless, some of the matters discussed here can be readily addressed under the existing OHS statutes to enhance enforcement of the current duties relevant to safe design.

It should be noted that the guiding principles and elements of enforcement policy outlined here are not intended as a "blueprint". Rather, they are raised as a basis for discussion, to enable consideration of an approach to enforcement that is tailored to safe design. Three guiding principles are proposed.

The first principle is **consistent enforcement**. While there is some consistency between jurisdictions in regard to current enforcement activities, there is variation in enforcement policy and practice. The employer/worker focus of much enforcement activity permits an approach to OHS law and its enforcement that is jurisdiction based. Such a jurisdiction-based approach is unworkable when it comes to addressing the safe design duties. By its nature supply crosses jurisdictional borders, including international ones, and there is a need for both consistent law in this area and a consistent approach to its enforcement so that similar circumstances are treated in a like manner. Arguably this demands a national policy for enforcement of safe design matters. At least it demands a policy that has consistent elements and is implemented in a consistent manner by each jurisdiction.

The second principle is **strategic enforcement**. What mechanisms can be used for achieving compliance with safe design duties and how can these duties be most effectively enforced? This includes alternative measures not currently provided for in the OHS statutes and consideration of how and when these measures might be applied. It is important to emphasise that with safe design, a proactive approach is crucial. The goal of enforcement is to prevent unsafe designed-products from entering the market, or being put into use. This requires a targeted approach to make relevant parties aware of their safe design duties and giving direction, as required. A "responsive" approach to enforcement should be applied (as discussed further below). If unsafe products are identified, and they are already on the market or in use, enforcement mechanisms are required to recall them or require that they are modified to eliminate or minimise risk. A reactive approach to enforcement, that responds only to incidents that occur with unsafe products, is unlikely to be effective in promoting the goal of safe design. It is crucial to target duty holders proactively to determine compliance and respond appropriately.

The third underpinning principle is **responsive enforcement**. Traditionally, approaches to regulatory strategy have been divided between a “deterrence” or “punishment” approach on the one hand and “compliance” or “persuasion” approaches on the other. Deterrence theory argues that if offenders are detected with sufficient frequency and punished with sufficient severity then they will perceive that the costs of violation outweigh the perceived benefits (Gunningham and Johnstone, 1999: 197-192). General deterrence holds that a population of firms can be persuaded from violating a law if they believe it is certain that non-compliance will be detected and punishment severe and swift. Specific deterrence holds that if a particular firm is punished for violating a law, it will be less likely to repeat the violation. In contrast compliance approach relies on persuasion to achieve compliance, emphasising cooperation between regulator and regulatee rather than confrontation; conciliation and negotiation rather than coercion (Black, 2001; Gunningham, 1987).

Increasingly, regulators are recognising that the most credible and optimal enforcement strategy is achieved by a judicious mix of persuasive and deterrence approaches (Ayres and Braithwaite, 1992; Kagan, 1994; Gunningham and Johnstone, 1999, chapter 4). Under this model the regulator assumes that duty holders will be compliant, and begins enforcement activity by attempting to persuade the regulatee to comply voluntarily. If compliance is not forthcoming, the regulator escalates the response, through a range of sanctions such as improvement, prohibition and infringement notices and prosecution. This responsive approach to enforcement provides both the chance to foster cooperative compliance when this is possible, but applies deterrent and ultimately (if necessary) incapacitating penalties for persistent and serious non-compliance.

Applying the principle of responsive enforcement, enforcement policy for safe design should encompass elements that encourage and persuade those responsible to address safe design but enable escalation of the enforcement response to provide an effective deterrent when required. In Section 14.2 we outline some possible elements of an enforcement policy for safe design. In the ‘Conclusions About Enforcement Policy for Safe Design’ at the end of Part Six we organise these elements into different types of enforcement responses, to facilitate consideration of a responsive approach to enforcement for safe design.

## **14.2 Some Elements for Consideration**

### **14.2.1 Commitment to safe design**

An explicit commitment to address safe design duties in the enforcement policies of the OHS authorities would help to ensure that attention is focused in this area. Only some authorities currently do this. For example, the Victorian WorkCover Authority's *Compliance and Enforcement Policy* (2002: 8) emphasises that all duty holders may be targeted including designers, manufacturers, importers and suppliers.

### **14.2.2 Identifying target groups**

Ideally, ensuring compliance with safe design duties involves a proactive approach in which those responsible are targeted to ensure that they are aware of their responsibilities and how to comply with them. For OHS inspectorates there are some challenges involved in identifying target groups, although some are more readily identified than others.

For plant and substances, manufacturers (and associated designers) can be identified from employer classifications under workers compensation schemes. There are industry classifications for manufacturers of different types. For buildings and structures, a requirement for notification of construction projects at the commencement of the planning/design phase would enable identification of the parties involved in these projects (see Part Three, Conclusion for further discussion of notification). Business franchising systems, by their nature, develop a profile in the community and routine workplace enforcement and liaising between OHS agencies may be sufficient to identify the key franchisors.

However, suppliers<sup>32</sup> and importers of plant, substances and structural materials are a much larger group and more difficult to identify comprehensively. Using workers compensation coding or "yellow pages" searches it is possible to identify a broad group of those that wholesale, retail, lease or hire relevant items (eg machinery). If a database is developed through sources such as these, information can be sent to the whole group with follow up to a randomly selected sub-group. An example of a targeted approach used by the Swedish Working Environment Unit in relation to machinery safety is presented in Table 13. This involves mail contact with all firms supplying particular machinery and equipment, advice to all that they might be required to provide evidence of compliance in a follow-up contact, and direct follow-up with a sample of firms in the group.

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<sup>32</sup> Supply includes retail sale, wholesale, exchange, second hand sale, auction, lease, hire, hire-purchase, and distribution and includes any form of resupply.

**Table 13: An Example of Safe Design Enforcement in Sweden  
(Reproduction of bulletin sent to mail order firms and web stores  
by the Swedish Work Environment Authority, 2002)**

**Scrutiny of products and documentation - "market control"**

**You are one of the firms included** in a market control, to be jointly carried out by the Swedish Work Environment Authority and the Swedish Consumer Agency in the autumn of 2002, concerning products sold through mail order firms or web stores. This time the focus will be on machinery, personal protective equipment, simple pressure vessels and pressure-retaining devices, and ladders and scaffolding.

**Market control** means surveillance to verify that products placed on the market conform to current requirements and that remedial measures are taken in the event of the rules being infringed. Stipulations exist concerning product safety, but also concerning labelling and documentation. All products must be accompanied by **instructions for use in Swedish**. Many products which can be sold freely within the European Community are subject to stipulations concerning **CE marking and conformance certification**.

Some of the firms receiving this bulletin **will be contacted by us later**. We may then ask to see instructions for use and conformance certificates, type inspection certificates etc. or to be given technical information about the products. Personnel from the Work Environment Authority may also **visit** the undertaking in order to examine products and documents.

**Manufacturers and suppliers** shall see to it that their products meet health and safety requirements and requirements of marking and documentation. Failure to meet these requirements can have legal consequences. You can study the stipulations and read more about CE marking, product safety and market control on the Work Environment Authority website, [www.av.se.amnessidor/marknadskontroll](http://www.av.se.amnessidor/marknadskontroll). The website includes the current rules applying to various products.

We are enclosing with this bulletin the following printed publications (in Swedish): "CE marking of personal protective equipment" ADI 469, "Rules for machinery" ADI 438 and a presentation of the Work Environment Authority, ADI 4.

Work Environment Authority Unit for Machinery and Personal Protective Equipment.  
Tel. +46-8-730 94 42.



The proactive approach can be supplemented by a reactive response when problems arise due to supply of unsafe products. However, rather waiting for reporting of injuries, a wider, reactive response could be facilitated by a voluntary notification system in which workplace purchasers are encouraged to notify unsafe products where their own efforts to have problems rectified are unsuccessful.

Whatever arrangements are determined for identifying target groups, the principle of consistency should be kept in mind. Enforcement priorities should not be determined on criteria such as ease of accessing the target group. For example, local manufacturers may be easier to identify than importers but imported products should receive equivalent attention. Ideally, targeting would be based on criteria such as risk. However, in situations where lack of specific knowledge about firms within a target group precludes this, a program of engagement with a randomly selected group of firms, and promotion of this activity, can help to encourage compliance. In such a program, all firms in the target group are advised, for example, that audits will be conducted and the general results of audits are publicised with information about action that firms can take to ensure compliance.

### **14.2.3 Encouraging safe design**

The traditional methods for encouraging compliance involve provision of information and education. There is a challenge to deliver safe design information in a form that is useful to those involved in upstream functions. Some of the regulatory approaches canvassed in the previous parts of this report go further than current OHS law in providing direction about essential health and safety requirements and technical standards that provide design solutions. The potential to make greater use of OHS performance-outcome provisions and evidentiary standards in the regulation of safe design was canvassed in Sections 12.5 and 12.6 of this report.

Australian OHS authorities have withdrawn from providing specific advice or solutions to OHS problems. Indeed there has been a trend in some inspectorates to reduce the number of staff with qualifications and experience especially relevant to safe design, such as engineering and ergonomics. A more generalist approach to enforcement typically involves seeking evidence that OHS management processes are in place, for example, how is risk management undertaken? What are the arrangements for product examination and testing? How is product safety information developed and distributed? However, processes can be vague and directionless for those wrestling with technical aspects of design. There is also a need to develop alternative ways to engage with designers and manufacturers to focus their attention on problems to address, without providing all the answers. Making greater use of OHS performance-outcome provisions and evidentiary standards in the regulation of safe design would provide a basis for OHS inspectors and third party advisers to engage with designers, manufacturers, constructors and franchisors around substantive OHS issues, for example, by discussing how essential health and safety requirements have been addressed.

There may also be a place for voluntary third party assessment. This is provided for under both the *Building Code of Australia* and the *European Machinery Directive*. While some high risk plant warrants mandatory third party design verification, for most designed-products a process of self-assessment is applied. However, some designers and manufacturers would value being able to seek confirmation from a competent authority that they have adequately identified hazards with their product and implemented suitable control measures. While it could be argued that there is nothing to stop a designer or manufacturer seeking independent advice now, there is not a ready pool of consultants with the combined technical expertise and OHS knowledge. The European system of notified bodies established a group of third party assessors with the necessary knowledge and experience. They may be drawn on for both mandatory third party assessments as well as voluntary third party assessment.

#### **14.2.4 Encouraging customer regulation of safe design**

One of the most powerful influences on upstream parties is the expectations of the customer. The use of supply-chain pressure is a means of informal market control over the practices of suppliers (especially small to medium sized organisations (SMEs)) (Gunningham and Johnstone, 1999: 130). In particular, the use of OHS management systems has prompted some organisations, especially larger ones, to influence the OHS practices of their suppliers and contractors, who are generally responsive as their survival depends on maintaining the business relationship.

Ensuring that this influence is exercised in the interests of safe design by addressing OHS in the procurement process is a crucial element of OHS management. In the interests of raising the profile of safe design, procurement should be a core focus of inspectors' audits of OHS management systems, ensuring that "customer organisations" are a conduit to their suppliers. For example, this could include requiring that purchasing procedures, contracts procuring specific items, design briefs and tender documents specify OHS requirements. A focus on risk management in procurement also provides a basis for tracing safe design problems and following these through with the responsible organisations.

Recognising that some customers are more influential than others the voluntary notification system suggested in Section 14.2.2 could provide a back-up to regulation through customer procurement practices. With voluntary notification, workplace purchasers would be encouraged to notify unsafe products where their own efforts to have problems rectified are unsuccessful.

#### **14.2.5 Inspection**

As discussed in Section 14.1, priority should be given to targeting enforcement activity proactively with designers, manufacturers, constructors and franchisors to signal the importance of addressing safe design matters before products are placed on the market or put into use. While proactive strategies to encourage compliance are appropriately aimed as early as possible in a product's life cycle, there are questions to resolve about the timing of inspections aimed at identifying non-compliance. Inspectorates will need to resolve whether the duty to ensure safe design can be judged during the design phase or is it necessary to wait until the design is complete? Until the product is made or constructed? Until it is actually placed on the market?

Until it is in use? In many instances designed-products will be both in development or production, and in circulation or use because the "producer" has been involved in making products of this type for a period of time. Thus enforcement can be targeted to the upstream phases and be informed by experience with an existing product range.

In part, decisions about when to enforce will also depend on the focus of these inspections. For example, inspections may inquire into how processes are carried out (such as risk management, information provision, testing and evaluation). Inspections may also examine relevant documentation. Processes and documentation can be considered at any time and direction given about their adequacy. Alternatively, inspections may focus on OHS outcomes. For example, is the product safe and without risks to health as far as practicable; have essential health and safety requirements been addressed in the design? This may best be focused on completed items. However, inspectors' notices can still be used to give direction, even for a product "in development", although a prosecution for non-compliance is probably inappropriate. Thus decisions about when to enforce, will also be influenced by the type of action that it is envisaged to take on the findings of an inspection. (The different forms of action are discussed further in the following sections).

#### 14.2.6 Improvement notices

An improvement notice is issued by an inspector to require action to remedy a contravention of the legislation. If this form of notice is to be used for safe design contraventions the relevant provisions in some OHS statutes will need amendment to enable an improvement notice to be issued to *any person* responsible for a contravention. An example of suitable wording which is consistent with OHSA (Vic: s 43), is presented in Table 14.

**Table 14: Statutory Provision for Improvement Notice**

(1) Where an inspector is of the opinion that *any person*-  
 (a) is contravening any provision of this Act or the regulations; or  
 (b) has contravened such a provision in circumstances that make it likely that the contravention will continue or be repeated –

the inspector may issue to the person an improvement notice requiring the person to remedy the contravention or likely contravention or the matters or activities occasioning the contravention or likely contravention.

*Etc (see for example OHSA (Vic) s 43).*

### 14.2.7 Prohibition notices

A prohibition notice is issued by an inspector to prohibit an action or circumstances where there is an immediate (imminent) and serious threat to health and safety. Application of such a notice to safe design matters could be achieved by amending current provisions relating to prohibition notices or by establishing a separate form of notice. An example of suitable wording is presented in Table 15. This could either be the basis for amendment of provisions relating to prohibition notices or for a separate form of notice.

**Table 15: Statutory Provision for Prohibition of Unsafe Design Contraventions**

(1) Where an inspector is of the opinion that the nature of a threat or degree of risk to health and safety of any person warrants prohibition of an activity, the inspector may issue to the person who has or may be reasonably presumed to have control over the activity a notice prohibiting the carrying on of the activity until an inspector certifies in writing that the matters which give or will give rise to the risk are remedied.

*Etc*

It should be noted that a prohibition notice issued by an inspector is probably not an appropriate course of action for prohibition or restriction of supply of a product. An alternative mechanism for this is discussed in Section 14.2.11 below.

### 14.2.8 Infringement or penalty notices ("on the spot fines")

An infringement notice is an administrative notice, authorised by statute, which sets out particulars of an offence and gives the alleged offender the option of either paying a penalty to expiate the offence or electing to have the matter dealt with by a court (Australian Law Reform Commission, 2002: 395-396). Infringement notices are provided for under the OHS statutes in NSW, Queensland, Northern Territory and the ACT, and proposed in Tasmania.

In principle these notices have the potential to influence OHS performance favourably. However, there are number of variables impacting on their effectiveness including the amount of penalty, whether notices are accompanied by formal direction to remedy specific problems and how they are used in the context of a range of other sanctions. The Australian Law Reform Commission (2002: 418) argues that infringement notices should only apply to strict or absolute liability offences (for example, that don't involve decisions about "practicability"), or contraventions of a less serious nature. They suggest that infringement notices should only be issued for clear-cut offences. Nonetheless, it is important to optimise their preventive value. Both OHSA (NSW) and WHA (NT) include in the list of expiable offences some matters that are both clear and unambiguous, and have a direct effect on risk control. Thus if infringement notices are included as an element of enforcement, consideration should be given to those offences

where an “on-the-spot” penalty may both deter non-compliance but also stimulate action to address safe design.

#### **14.2.9 Refusal to register or approve design**

Australian OHS regulations currently require third party verification of the design of high risk plant against specified standards. Suggestions were made in Sections 12.9 of this report to achieve national consistency in these arrangements. Such a mechanism encourages compliance because there is a built-in incentive. The plant cannot be supplied unless it is verified that the plant is designed and constructed to specified standards. As noted in Section 14.1, an important goal of enforcement is to prevent unsafe designed-products from entering the market, or being put into use in the first place. An effective system of design verification for high risk products is one means of achieving this. Withdrawal of registration is an option if defects are subsequently identified.

A similar mechanism is possible for safe design of buildings. Building legislation currently requires approval before a construction project can proceed. It would be possible to require that an OHS file addressing the OHS aspects of the design be submitted as part of this building approval (as currently required in some European countries).

#### **14.2.10 Investigation**

Investigation of safe design aspects should be undertaken for all significant incidents involving fatalities, serious injury or other high risk situations involving failure of plant, hazardous substances, collapses of buildings or structures (or parts of these). This would mean that the role of all relevant duty holders is considered, to determine if their acts or omissions contributed to the incident.

However, as noted in Section 14.1, the goal of enforcement is to prevent unsafe designed-products from entering the market, or being put into use. In the context of a proactive, targeted approach, if a relevant party has been made aware of their safe design duties and given formal direction, which they have failed to respond to, further investigation may be warranted with a view to prosecution (as discussed further in Section 14.2.15).

Alternatively, an investigation might be carried out into an unsafe product with a view to issuing warnings and taking other action to protect procurers (as discussed below).

#### **14.2.11 Warning notice and prohibition of supply**

Inspectorates currently publish hazard alerts to warn of risks of particular products. A more formal mechanism is for the responsible Minister to publish a warning notice in the government *Gazette*. Such a notice might give notice that a particular product is under investigation (and seek information from users). It might also warn of risks, or advise of restrictions on supply or use. Gazettal of a notice following investigation could also be the mechanism for declaring that a particular product is prohibited.

Ministerial notices are already provided for under WHSA (Qld) s 26 as well as the *Trade Practices Act* (as discussed in Section 5.3.1). In regard to the latter, if warning notices and prohibition of supply are pursued as enforcement mechanisms for safe design under the OHS statutes, there should be discussion with the Australian Competition and Consumer Commission to ensure that complementary arrangements are established.

#### **14.2.12 Mandatory and voluntary recall and restrictions on sale**

If a product is dangerous a mechanism to recall the product or its component parts (or restrict its sale) enables the risk to be addressed at the source. This has the merit of requiring the responsible party to remove or rectify the risky product (as compared to a prosecution "after the event" which may penalise the responsible party but leaves the unsafe product in the workplace).

A recall or restrictions on sale may be compulsory, for example required by the Minister where a product will or may cause injury to a person and it appears to the Minister that the supplier has not taken satisfactory action to prevent the product causing injury. Action is taken by notice in the relevant government *Gazette* and may include requiring the supplier to do one or more of the following:

- (a) recall the goods within a specified period (in accordance with any directions given by the Minister);
- (b) disclose to the public or to specified person the nature of a defect in, or a dangerous characteristic of, the product; the circumstances in which the use of the product is dangerous; or procedures for disposing of the product specified in the notice;
- (c) inform the public, or specified persons that the supplier undertakes to repair the product (except where the notice identifies a dangerous characteristic of the product); replace the product; refund the price of the product.

The supplier would have the opportunity to request a conference in relation to the proposal to recall or restrict supply, prior to the publication of the notice.

Of course there is nothing to prevent a supplier from voluntarily recalling a product found to be dangerous. However, it is useful for injury prevention if a voluntary recall is notified so that it is included in a public register.

Note that the *Trade Practices Act 1974* and electrical equipment safety legislation have provision for recalls and restrictions on product supply. If this approach is considered useful for workplace products, there should be discussion with the ACCC to determine how complementary arrangements can be established.

#### **14.2.13 Enforceable undertakings**

This mechanism involves an inspectorate accepting a written undertaking given by the duty holder. For example, an enforceable undertaking might be a commitment to review and improve a design to the satisfaction of the regulator, or to implement a “safe design compliance program” involving development of a system and arrangements for risk management, product testing and examination, and product safety information.

This approach is used under the *Trade Practices Act 1974* (TPA: 87B and 87C) in relation to trade practices, including product safety. A firm may be required to enter into an agreement to introduce a “trade practices compliance program” and if the regulator considers that the person who gave the undertaking has breached any of its terms, it may apply to the Court for an order. If the Court is satisfied that the person has breached a term of the undertaking, the Court may make an order directing the person to comply with the undertaking; directing the person to pay a fine; or another order that the Court considers appropriate. (See also Australian Law Reform Commission, 2002: 100-102, for further discussion of enforceable undertakings).

#### **14.2.14 Injunctions**

These are not currently provided for under the OHS statutes. The mechanism involves a Court granting an injunction in relation to particular conduct. Gunningham (1984:233-234) explains that an injunction is a court order restraining the person to whom it is directed from performing a particular act, and usually requiring the person to perform a specified act. If a person wilfully disobeys an injunction, s/he is in contempt of court and may be liable for other sanctions. It can be used punitively (a “punitive injunction”) to require an organization to remedy deficient OHS management practices (Gunningham and Johnstone, 1999: 271).

As applied under the *Trade Practices Act*, use of an injunction involves an application for an injunction to be made by the Minister or the relevant inspectorate. A similar approach is envisaged if injunctions are considered an appropriate enforcement mechanism to incorporate under the OHS statutes in relation to safe design. However, a punitive injunction could also be made as a court order resulting from a prosecution (see also ‘Corporate Probation’ below).

### **14.2.15 Prosecution and penalties**

Prosecutions are normally reserved for more serious breaches of legislation and/or when an inspector's notice has not been complied with. As discussed in Section 14.2.9, investigations of incidents should, as a matter of course, identify all relevant parties to an alleged breach. A multi-party prosecution strategy is both more resource effective as well as more appropriate in view of the fact that multiple parties have responsibility under the OHS statutes.

However, even if upstream offences are investigated, there are practical difficulties regarding the timing of the offence, collection of evidence "after the event" and the short time frames for prosecution (as discussed in Section 13.5). Currently, the statute of limitations in most OHS jurisdictions precludes prosecutions in many instances as the time frame within which a prosecution must be initiated is dated from the date of the offence. Thus, for example, if the time period within which a prosecution can be initiated is two years from the date of the alleged offence, it would not be possible to prosecute a manufacturer of unsafe plant, for a breach identified today, if the plant was manufactured four years ago.

This has been partly remedied under OHSA (NSW): s 107 which provides a period of six months for instituting proceedings, after WorkCover first becomes aware of the act or omission alleged to constitute the offence. However, this time period may be rather limited to gather evidence and initiate prosecution. A period of 18 months, commencing from the time the alleged offence is detected, would be a more appropriate timeframe for gathering evidence and initiating a prosecution.

If a prosecution is successful, there is a range of penalties that can be imposed by a court, as follows.

#### **Fines**

The OHS statutes currently provide for fines, which differ between the jurisdictions for the same offence. In view of the supply of products across jurisdictional borders, there should be consistency in the level of the fine for the same offence. However, over and above the level of fines, consideration should be given to the appropriateness of imposing a fine. There are a number of deficiencies of financial penalties. As Gunningham and Johnstone, 1999: 257-258) explain there is concern that fines can signal to corporations that offences are "purchasable commodities" rather than acts and omissions considered by the state to be intolerable. They also only impact on the financial concerns of an organization and do not require organisations to review their management of OHS or safe design practices to ensure that there is not a repetition of the offence. (See Australian Law Reform Commission, 2002: 88-90; and Gunningham and Johnstone, 1999: 257-259 for further discussion of the deficiencies of financial penalties).

Some alternative sanctions, such as court ordered publicity and corporate probation, discussed below, provide alternatives that may provide a greater impetus to take action to improve organisational practices.



### **Order to disclose information or publish advertisement**

Court-ordered adverse publicity is an example of the use of “shaming” as a means of influencing behaviour. As Gunningham and Johnstone (1999: 265) suggest: “The company could also be required to pay for and have published remedial notices or warnings, a sanction which is important where the offence is a contravention of a general duty imposed upon a supplier or manufacturer of plant, equipment, or substances.”

Court ordered publicity is provided for under OHSA (NSW): 115). Where the Court is satisfied that a person has engaged in conduct constituting a contravention of the Act the Court may make an order requiring the disclosure of specific information to the public or to particular persons; or an order requiring the person to publish advertisements in a specified manner and at a specified time.

### **Corporate probation**

Corporate probation has the underlying goal of deterring non-compliance but has the advantage that it contains elements of rehabilitation (Gunningham and Johnstone, 1999: 266). As these authors explain, corporate probation involves a court making an order, which can be made in relation to a variety of matters. For example, it might involve requiring senior management in the organisation to: (1) to change the way it implements safe design measures and associated management practices (an organisational reform order); (2) implement internal discipline measures (an internal discipline order). The Court might also order that specific action is taken to review the design of a product and report to the Court on how the design has been reviewed and made safe.

Thus corporate probation overcomes many of the deficiencies of financial penalties. It “... enables an examination of factors within the organization which have led to contraventions, and the development and implementation of programmes to prevent further contraventions. Probation can be used against corporate offenders with cash flow difficulties. It minimizes ‘spillover’ effects and addressed non-financial values within the organization.” (Gunningham and Johnstone, 1999: 271; and see also pp 266-272 for further discussion of corporate probation).

### **Progressive Summary - Reform of Enforcement for Safe Design**

In Section 14 it was proposed that enforcement policy for safe design should be: consistent across jurisdictions; strategic, with an emphasis on proactive and targeted approaches; and responsive, enabling escalation of the response and application of different response appropriate to the circumstances.

A number of possible elements of enforcement policy were canvassed and explained. These included measures to persuade and promote voluntary compliance; measures to give formal direction including inspectors' notices and agreed (enforceable) undertakings; and measures to deter non-compliance including penalty notices, refusal to register design, prohibition of supply, court enforcement of undertakings, injunctions, prosecution, financial penalties and other court orders.

These principles and elements do not represent an exhaustive set of possibilities nor should they all necessarily be part of an enforcement policy for safe design. They are outlined in Section 14 to enable discussion of an appropriate approach to enforcement. In the 'Conclusions About Enforcement Policy for Safe Design' below we organise the key elements into different types of responses, to facilitate consideration of a responsive approach to enforcement.

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## Conclusions About Enforcement Policy for Safe Design

In Part Six we outlined some principles and elements to be considered in developing possible future directions for enforcement policy tailored to safe design. This complements the discussion of principles and elements of regulation for safe design canvassed in Part Five. The latter will also be a crucial influence on decisions about appropriate enforcement. Thus an enforcement policy for safe design will need to be considered in light of any proposals for law reform.

There are some obvious weaknesses in the current approach to enforcement of safe design under the Australian OHS statutes. Investigation, if it occurs is after the event in the context usually of a serious incident; provisions relating to improvement and prohibition notices under some of the OHS statutes can only be issued to an employer, limiting the mechanisms for formal direction to other duty holders. Prosecutions are rare for safe design offences and must be initiated within very tight timeframes.

In canvassing options for future enforcement policy, we begin by emphasising that such policy should make an explicit commitment to address safe design in the enforcement policies of OHS authorities. Only some enforcement policies of OHS authorities currently do this (see for example Victorian WorkCover Authority, 2002). We also emphasise three key principles to underpin enforcement policy.

The first principle is *consistent enforcement* across jurisdictions and for equivalent circumstances. It is important to ensure that the same response is applied to contraventions of a similar type, wherever they occur in Australia, and whether they arise in relation to "Australian-made" or imported products. Currently, there is a perception amongst local manufacturers of plant that more is expected of them in regard to OHS than is expected of equivalent imported plant. There is also a perception that more is expected of manufacturers in some states than in others (Bluff, 2002). A consistent approach to enforcement requires a cooperative and coordinated approach by enforcement agencies, applying a consistent range of enforcement strategies and sanctions.

The second key principle is *strategic enforcement*. This emphasises a proactive, targeted approach to enforcement. The most suitable enforcement measures may not be the same as those used for regulating the actions of employers or workers. In particular, enforcement should be aimed at preventing unsafe designed-products from entering the market, or being put into use, or being constructed (in the case of buildings and structures). Measures are also required to deal with unsafe products that are identified. Currently, if an unsafe product is identified in a workplace it is more likely that the employer will be called upon to control the risks, even if the risks were inherent in the design of the product. A different approach is needed that ensures that the relevant upstream parties take appropriate action to remedy the situation.

The third key principle is *responsive enforcement*. This involves tailoring the response to the nature of non-compliance and taking into account compliance history. It begins with efforts to inform and persuade responsible parties and provides for an escalation of response when this is warranted. Duty holders have the opportunity to comply

voluntarily with advice and guidance, but a range of alternative action might be taken if non-compliance persists.

In Section 14.2 we described some different possible responses. Below we organise these into different types of responses applicable to safe design. These are: (1) measures to persuade and promote voluntary compliance; (2) measures to give formal direction to duty holders; (3) measures to warn and protect those procuring designed-products; and (4) measures to deter future non-compliance.

### **Measures to persuade and promote voluntary compliance**

The strategies that might be used by an enforcement agency to persuade and promote voluntary compliance include:

- *Engaging* with upstream duty holders to discuss action taken to address safe design. The intent is that the responsible party explains how they have addressed essential requirements, which might be facilitated by discussing how particular OHS performance-outcome provisions have been addressed and/or relevant evidentiary standards applied (see Section 14.2.3).
- *Auditing safe design management practices*, focusing on the arrangements in place for risk management, testing and examination of products; and information provision (see Section 14.2.3).
- *Voluntary third party technical assessment* to enable confirmation, from a competent authority, that hazards have been adequately identified and eliminated or controlled (note that this is initiated by the responsible party and is separate from the mandatory technical assessment or design verification for high risk products) (see Section 14.2.9).
- *Auditing of procurement* practices in employers' OHS management systems to ensure that purchasing procedures, contracts procuring specific items, design briefs and tender documents specify OHS requirements (see Section 14.2.4).
- *Voluntary notification of unsafe products* to OHS inspectorates (by procurers) where the purchaser's efforts to have problems rectified by the "supplier" are unsuccessful (see Section 14.2.4).
- Voluntary implementation of a "*safe design compliance program*" which involves establishing systems to manage safe design requirements. Such an agreement could also be the basis of an agreed undertaking with the OHS authority (that is, an "enforceable undertaking") (see Section 14.2.13).
- *Voluntary recall* of hazardous products (or components) and notification to the relevant authority (see Section 14.2.12).

### Measures to give formal direction to duty holders

The strategies that might be used by an enforcement agency to give formal direction to duty holders include:

- *Targeted inspections and audits* with follow up direction (see Section 14.2.2).
- Issue of *improvement and prohibition notices* to give formal direction in relation to contraventions. Note that some OHS statutes would require amendment to enable these notices to be used for safe design duties - see Sections 14.2.6 and 14.2.7).
- Requirement to enter into an *enforceable undertaking* with the relevant authority, for example, to establish a "safe design compliance program" or to review and improve a design to the satisfaction of the regulator. An agreed undertaking would be enforceable by the court (see 'Measures to deter non-compliance' below and Section 14.2.13).

### Measures to warn and protect those procuring designed-products

The strategies that might be used by an enforcement agency to warn those procuring designed-products about unsafe items include:

- Investigation of hazardous designed-products and publication of a Ministerial *warning notice* in the relevant government *Gazette* advising of specific product risks and action taken to restrict supply or use (see Section 14.2.11).
- Investigation of hazardous designed-products and publication of a Ministerial notice advising of *mandatory product recall* and/or *restrictions on sale* and/or *advice* to procurers (see Section 14.2.12).

### Measures to deter future non-compliance

The strategies that might be used to deter future non-compliance include:

- (e) *Penalty or infringement notices* ("on-the-spot" fines) for specific safe design offences (see Section 14.2.8).
- (f) Refusal of *design registration* (eg high risk plant) or *approval* of a new development (eg construction projects or hazardous substances) (see Section 14.2.9).
- (g) Investigation of a hazardous designed-product and *prohibition of supply* by publication of a Ministerial notice in the relevant government *Gazette* (see Section 14.2.11).
- (h) *Enforcement of undertakings* entered into with the relevant authority, where the undertaking has been breached. If the inspectorate considers that the person who gave the undertaking has breached any of its terms, it may apply to the Court for an order which might include directing the person to comply with the undertaking, to pay a fine, or another order (see also 'Measures to give formal direction to duty holders' above) (see Section 14.2.13).
- (i) Application by the relevant authority to the court to grant an *injunction* in relation to particular conduct (see Section 14.2.14).

- (j) Investigation and *prosecution* of serious and/or persistent breaches. Note that amendments are required to most OHS statutes so that the time period for initiating a prosecution commences from the time the alleged offence is detected, for example, 18 months from detection of the alleged offence) (see Section 14.2.15).
- (k) Penalties imposed by a court if a prosecution is successful to include: *fin*es (set at the same level in all jurisdictions); *court orders* to disclose information and/or publish an advertisement and other forms of *corporate probation* such as requiring senior management in the organisation to change the way it implements safe design measures and associated management practices (see Section 14.2.15).

In conclusion, there is a range of possible futures for enforcement of safe design. The key principles and elements canvassed in this Part of the report are designed to give some focus to discussion of enforcement policy in this area. These principles and elements do not represent an exhaustive set of possibilities nor should they all necessarily be part of an enforcement policy for safe design. The best "mix" of strategies will ultimately be influenced by the nature of regulatory provisions and the jurisdiction in which they are made. In selecting and combining different approaches the principle of responsive enforcement should be a key consideration, with a view to combining a range of strategies that enable escalation of the enforcement response.

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## **PART SEVEN**

### **Conclusion**

## 15. Conclusion

"Safe design" is concerned with eliminating hazards and controlling risks to health and safety "at the source", as early as possible in the life cycle of the items that comprise workplaces, or are used or encountered at work. A safe design approach begins in the planning and design phases with an emphasis on making choices about the design, methods of manufacture or construction, and or materials used which enhance OHS.

While the Australian OHS statutes have, for more than ten years, required that some aspects of safe design be addressed in relation to some designed-products, there is concern that the regulatory provisions and enforcement strategy are not optimal. To this end the National Occupational Health and Safety Commission (2002a and b) has resolved to improve the regulatory framework for safe design by:

- undertaking a review of the regulatory framework and development of improvement options;
- development of consistent enforcement strategies;
- building safe design principles into national/state/territory standards and codes of practice.

The reviews of existing Australian OHS law and its enforcement, as presented in Sections 3,7, 10.2, 11 and 13 of this report, outline the current arrangements and confirm some of the gaps and weaknesses. Moreover, the review of other Australian and overseas law relevant to safe design, provides some examples of alternative approaches that can help to inform the process of regulation development.

The "designed-products" discussed in this report are:

- plant (machinery, equipment, appliances and tools) and safety components of these;
- buildings, structures, other construction projects and structural materials (including safe design for safe construction as well as safe end use);
- substances (in regard both to toxicological and physico-chemical properties); and
- business systems (especially business franchising systems).

This is not an exhaustive set of designed-products, just some of the key types. However, the approaches to safe design regulation canvassed below can be applied, as appropriate, to other designed-products.

Parts Five and Six of the report draw together the review of regulation in earlier parts of the report and present some guiding principles and elements for consideration, in developing a regulatory regime for safe design and its enforcement. As we emphasised previously, the principles and elements are not intended to be directive, they are not necessarily exhaustive, and nor are they all necessarily applicable to each type of designed-product. It is intended that they provide a stimulus for discussion about an appropriate regulatory response for different types of designed-products. For easy reference we conclude this report with a summary of the guiding principles and elements for safe design regulation, and for an enforcement policy that is tailored to safe design. Readers should refer to Parts Five and Six for a fuller explanation.



<b>Table 16: Summary of Principles and Elements for Regulation of Safe Design</b>	
A <b>nationally consistent regulatory regime</b> . Ways of achieving this include: (1) template OHS legislation adopted in an identical form by each jurisdiction; (2) national OHS legislation adopted by the Commonwealth government using a relevant Constitutional "head of power"; (3) integration of OHS requirements for safe design into another national or nationally coordinated regulatory regime, for example the <i>Building Code of Australia</i> or the <i>National Industrial Chemicals Notification and Assessment Scheme</i> .	
<b>Responsibility</b> assigned to persons with control of particular design functions, either by: (1) assigning the same duties to any person responsible for procurement, design, manufacture, construction, import, supply, installation, erection, commissioning (as appropriate to each designed-product), requiring that OHS is addressed as far as practicable, and to the extent of the person's control; or (2) assigning different duties to different parties, for example, so that a person who designs has different duties to a person who supplies.	
Core <b>processes for systematic management</b> of safe design, that is: (1) risk management; (2) testing and examination; and (3) information provision. For each of these core processes it is important to guide and focus the activities of those involved in safe design by defining OHS performance outcomes and/or providing guidance in the form of evidentiary standards.	
Use of <b>performance-outcome provisions</b> to define OHS outcomes to be achieved while leaving open the means for achieving them.	
Use of <b>evidentiary standards</b> , including technical standards, to describe acceptable methods or ways of achieving OHS outcomes.	
<b>Technical assessment or design verification</b> for high risk products, as a means of ensuring that OHS matters have been addressed before they are placed on the market. This also requires independent and technically competent persons and agreed technical criteria or standards.	
Forms of <b>documentation</b> to record action taken to address OHS, for example, by technical files and OHS plans, to assist inspectors, procurers and third party assessors to evaluate safe design.	
Application of a <b>safe design mark</b> and <b>declaration of conformity</b> to signal that action has been taken to address safe design matters.	
<b>Notification</b> as a process of alerting relevant authorities to particular designed-products, early in the life cycle, to enable a strategic response.	
Definition of <b>OHS competencies</b> for safe design as a strategy to ensure that those involved in safe design functions are equipped with relevant OHS knowledge and skills.	
Use of the expression " <b>practicability</b> " (as framed in each jurisdiction) to provide the necessary qualification of duties, and removal of the expression "when properly used" as it gives a false impression about reliance on warnings rather than ensuring that a designed-product is inherently safe, as far as "practicable" and conflicts with the common law.	

<b>Table 17: Summary of Principles and Elements of Enforcement for Safe Design</b>
Enforcement policy to make an explicit <b>commitment</b> to address safe design in the enforcement activities of OHS authorities.
<b>Consistent enforcement policy and practice</b> across jurisdictions and for equivalent circumstances, so that the same response is applied to contraventions of a similar type, wherever they occur in Australia, and whether they arise in relation to "Australian-made" or imported products. A consistent approach to enforcement requires a cooperative and coordinated approach by enforcement agencies, applying a consistent range of enforcement strategies and sanctions.
<b>Strategic enforcement</b> which emphasises a proactive, targeted approach to enforcement. In particular, enforcement should be aimed at preventing unsafe designed-products from entering the market, being put into use, or being constructed (in the case of buildings and structures). Measures are also required to deal with unsafe products that are identified, that ensure that the relevant upstream parties take appropriate action to remedy the situation.
<b>Responsive enforcement</b> which involves tailoring the response to the nature of non-compliance and taking into account compliance history. It begins with efforts to inform and persuade responsible parties and provides for an escalation of response when this is warranted. Duty holders have the opportunity to comply voluntarily with advice and guidance, but a range of alternative action might be taken if non-compliance persists.
<p><b>Measures to persuade</b> and promote voluntary compliance including:</p> <ul style="list-style-type: none"> <li>(a) <i>engaging</i> with upstream duty holders to discuss how OHS performance-outcome provisions have been addressed and/or relevant evidentiary standards applied;</li> <li>(b) <i>auditing safe design management</i> including arrangements for risk management, product testing and examination, and information development and distribution;</li> <li>(c) <i>voluntary third party technical assessment</i> to enable confirmation, from a competent authority, that hazards have been adequately identified and eliminated or controlled;</li> <li>(d) <i>auditing of procurement practices</i> in employers' OHS management systems to ensure that purchasing procedures, contracts procuring specific items, design briefs and tender documents specify OHS requirements;</li> <li>(e) <i>voluntary notification of unsafe products</i> to OHS inspectorates (by procurers) where the purchaser's efforts to have problems rectified by the "supplier" are unsuccessful;</li> <li>(f) voluntary implementation of a "<i>safe design compliance program</i>" which involves establishing systems to manage safe design requirements. Such an agreement could also be the basis of an agreed undertaking with the OHS authority (that is, an "enforceable undertaking");</li> <li>(g) <i>voluntary recall</i> of hazardous products (or components) and notification to the relevant authority.</li> </ul>

## Principles and Elements of Enforcement Policy for Safe Design (*continued*)

Measures to give **formal direction** to duty holders:

- (a) *targeted inspections and audits* with follow up direction;
- (b) issue of *improvement and prohibition notices* to give formal direction in relation to contraventions (which would require amendment of the OHS statutes in some jurisdictions);
- (c) requirement to enter into an *enforceable undertaking* with the relevant authority, for example, to establish a "safe design compliance program" or to review and improve a design to the satisfaction of the regulator (breach of such an undertaking would be enforceable by the court).

Measures to **warn and protect procurers** of designed-products:

- (a) investigation of hazardous designed-products and publication of a Ministerial *warning notice* in the relevant government *Gazette* advising of specific product risks and action taken to restrict supply or use;
- (b) investigation of hazardous designed-products and publication of a Ministerial notice advising of *mandatory product recall* and/or *restrictions on sale* and/or *advice* to procurers.

Measures to **deter non-compliance**:

- (a) *penalty or infringement notices* ("on-the-spot" fines) for specific safe design offences;
- (b) refusal of *design registration* (eg high risk plant) or *approval* of a new development (eg construction projects or hazardous substances);
- (c) investigation of a hazardous designed-product and *prohibition of supply* by publication of a Ministerial notice in the relevant government *Gazette*;
- (d) *enforcement of undertakings* entered into with the relevant authority, where the undertaking has been breached - if the inspectorate considers that the person who gave the undertaking has breached any of its terms, it may apply to the Court for an order to direct the person to comply, to pay a fine, or make another order ;
- (e) application by the relevant authority to the court to grant an *injunction* in relation to particular conduct;
- (f) investigation and *prosecution* of serious and/or persistent breaches (amendments are required to most OHS statutes so that the time period for initiating a prosecution commences from the time the alleged offence is detected, for example, 18 months from detection of the alleged offence); and
- (g) penalties imposed by a court if a prosecution is successful to include: *fines* (set at the same level in all jurisdictions); *court order* to disclose information and/or publish an advertisement; other forms of *corporate probation* such as an order to implement a safe design management program.

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## **PART EIGHT**

### **References and Appendices**

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## List of Referenced Legislation

### Australia - OHS

<b>Jurisdiction</b>	<b>OHS Statute</b>	<b>Abbreviation</b>
Australian Capital Territory	<i>Occupational Health and Safety Act 1989</i> <i>Occupational Health and Safety Regulations 1989</i> <i>Approved Code of Practice: National Standard for Plant (NOHSC, 1994)</i>	OHSA(ACT) OHSR(ACT) ACOP NSP (ACT)
Commonwealth government	<i>Occupational Health and Safety (Commonwealth Employment) Act 1991</i> <i>Occupational Health and Safety (Commonwealth Employment)(National Standards) Regulations 1994</i>	OHS(CE)A (Cwlth) OHS(CE)(NS)R
Maritime industry	<i>Occupational Health and Safety (Maritime Industry) Act 1993</i> <i>Occupational Health and Safety (Maritime Industry) Regulations 1995</i>	OHS(MI)A OHS(MI)R
New South Wales	<i>Occupational Health and Safety Act 2000</i> <i>Occupational Health and Safety Regulation 2001</i>	OHSA (NSW) OHSR (NSW)
Victoria	<i>Occupational Health and Safety Act 1985</i> <i>Occupational Health and Safety (Plant) Regulations 1995</i> <i>Code of Practice - Plant 1995</i>	OHSA (Vic) OHS(P)R (Vic) COP(P) (Vic)
South Australia	<i>Occupational Health, Safety and Welfare Act 1986</i> <i>Occupational Health, Safety and Welfare Regulations 1995</i>	OHSWA (SA) OHSWR (SA)
Western Australia	<i>Occupational Safety and Health Act 1984</i> <i>Occupational Safety and Health Regulations 1996</i>	OSHA (WA) OSHR (WA)
Northern Territory	<i>Work Health Act 1986</i> <i>Work Health (Occupational Health and Safety) Regulations 1992</i>	WHA (NT) WH(OHS)R (NT)
Queensland	<i>Workplace Health and Safety Act 1995</i> <i>Workplace Health and Safety Regulation 1997</i>	WHSa (Qld) WHSR (Qld)
Tasmania	<i>Workplace Health and Safety Act 1995</i> <i>Workplace Health and Safety Regulations 1998</i>	WHSa (Tas) WHSR (Tas)

### **Commonwealth of Australia - non-OHS**

*Disability Discrimination Act 1992*, Commonwealth of Australia.

*Human Rights and Equal Opportunity Act 1986*, Commonwealth of Australia.

*Industrial Chemicals (Notification and Assessment) Act 1989*, Commonwealth of Australia.

*Industrial Relations Act 1988*, Commonwealth of Australia.

*Mutual Recognition Act 1992*, Commonwealth of Australia.

*Trade Practices Act 1974*, Commonwealth of Australia.

### **Australian State/Territory - non-OHS**

*Electricity (Licensing) Regulations 1991* (Western Australia).

*Electrical Products Act 2000* (South Australia).

*Electrical Safety Act and Regulations 2002* (Queensland).

*Electrical Safety (Equipment Safety) Regulation 1999* (New South Wales).

### **Overseas**

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*Occupational Health and Safety Act 1990* (Ontario, Canada).

*Occupational Safety and Health Act 1958* (as amended) (Finland).

*The Danish Working Environment Act 1998* (Denmark).

*The Supply of Machinery (Safety) Regulations 1992* (as amended 1994), United Kingdom.

*The Work Environment Act 1978* (Sweden).

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*Greaves and Co (Contractors) Ltd v Baynham Meikle* [1975] 3 All ER 99.

*Griffith v Arch Engineering Co Ltd* [1968] 3 All ER 217.

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*Howard v Furness Houlder Argentine Lines Ltd* [1936] 2 All ER 781.

*John Summers Ltd v Frost* [1957] AC 740.

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## Appendix 1 - Glossary of Key Terms

In discussing a regulatory regime to promote activity to make items safer at the source, it is necessary to clarify some key terms and concepts. Ultimately these terms may also need definition in the OHS statutes. Some preliminary definitions are presented here to aid interpretation of terms used in the report.

**Alter** means to change the design of, add to or take away, where the change may affect health and safety, but does not include routine maintenance, repairs or replacements. It does include modification and refurbishment.

**Authority** means any Commonwealth, state or territory regulatory authority with responsibility for occupational health and safety and includes an officer of that authority with responsibility delegated by the authority.

**Building or structure** includes a structure upon or attached to land; an addition to a building; a structure attached to a building; and a part of a building.

**Commission** means to put into active service or use.

**Competent person** means a person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills to enable that person to perform the task required.

**Construct** includes assembly, building, modification and refurbishment.

**Design** is the conceptual process used to bring together innovation, aesthetics, and functionality to plan and create an artefact, a product, a process or a system to meet an artistic or industrial requirement of an individual or group. It includes research and development, conceptual design, general design, drawings, plans, systems, quantities, method of construction or manufacture, detailed cost and risk analysis (including analysis of OHS risks), feasibility, detailed design, technical specification, and redesign.

**Designed-product** means the item to be designed, which might be a built environment, equipment, chemical, work system or process; or any other physical attribute or system associated with either the work place or the interface with people.

**Design verifier** in relation to the design of an item of plant means a competent person responsible for the verification of the plant design, who is not employed or engaged by the same person as the designer of the plant, unless the person uses a quality system to undertake the design of items of the plant and that system has been certified by a body accredited or approved by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

**Documentation**, in relation to a provision of legislation, means a provision that requires the obligation bearer to document the measures taken to comply with a general duty, performance style or systematic process.

**Erect** means to erect, dismantle or alter a structure or the structure of plant.

**Fault** means a defect that may present an increased risk to health and safety.

**General duty** (also known as a *principle*), in relation to legislation, is a broad statement which does not specify either the outcome or the measures to be taken (except in very general terms), but which requires the obligation bearer to exercise care, as far as is reasonably practicable, in an activity.

**Hazard** means a source or situation with the potential for harm in terms of human injury or ill health, damage to property, environment or a combination of these.

**Hazard identification** is the process of identifying potential causes of injury, illness or damage. Different methods may be used to identify hazards including observation; consultation with workers, clients or other users; trial of models or prototypes; review of technical standards and other information sources; monitoring and measurement.

**Hierarchy of control** means a list of control measures, in priority order, which can be used to eliminate or minimise exposure to risks. Application of the hierarchy of control involves firstly assessing whether a risk can be eliminated. Where this is not (reasonably) practicable, substitution is considered. If substitution is not (reasonably) practicable consideration is given in turn to the control measures of isolation, engineering controls, administrative procedures and use of personal protective clothing or equipment. This hierarchy is applied until a control measure or combination of control measures is applied which achieve sufficient control over the hazard(s) to reduce the risk to an acceptable level.

**Import** means to bring into a jurisdiction from another jurisdiction, either within the country or from outside the country.

**Install** means to place in position and set up for service or use.

**Life cycle** means all phases in the life of a designed-product. Specific phases depend on the type of product but may include design, development, manufacture, construction, assembly, import, supply, distribution, sale, hire, lease, storage, transport, installation, erection, commissioning, use or operation, consumption, maintenance, servicing, cleaning, adjustment, inspection, repair, modification, refurbishment, renovation, recycling, resale, decommissioning, dismantling, demolition, discontinuance, disposal.

**Maintain** means to keep in good condition and operation.

**Manufacture** means to produce; it includes assembly.

**Modify** means to alter (see definition above).

**Performance style** provision, in relation to legislation, means a provision that specifies the outcome of the OHS improvement but leaves the measures to achieve this outcome open to the obligation bearer to adapt to particular circumstances. This is

a generic term that refers to both *performance-outcome* and *performance-target* provisions, as defined below.

***Performance-outcome*** provision means a performance style provision that describes an OHS outcome to be achieved (for example: “machinery must be designed and constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering the internal parts.”)

***Performance-target*** provision means a type of performance style provision for which achievement of the OHS outcome is measurable (for example texposure standards for noise or for hazardous substances).

***Plant*** includes any machinery, equipment (including scaffolding), appliance, implement or tool and any component or fitting thereof or accessory thereto.

***Procure*** means to obtain supplies for an organisation, whether by purchase, exchange, lease, hire, hire-purchase or contract. It includes a contract specifying requirements for the design and/or manufacture of a designed-product.

***Redesign*** means to design again or differently; or a new design.

***Refurbish*** means to alter (see definition above), restore, alter or upgrade.

***Repair*** means to restore to operating condition, but does not include routine maintenance, replacement or alteration.

***Residual risk*** means the risk that remains after the application of controls, barriers and other risk reducing methods or techniques

***Restore*** means to return to original condition or refurbish.

***Retrofit*** means to make a modification made to a product to incorporate changes and developments after manufacture.

***Risk***, in relation to any hazard, means the probability and consequence(s) of occurrences of injury, illness or damage arising from exposure to a hazard.

***Risk assessment*** means the process of analysing the probability and consequences of injury, illness or damage arising from exposure to identified hazards.

***Scheduled plant*** means a defined list of high risk plant requiring design verification (eg as in the *National Standard for Plant*).

***Specification*** provision means a prescriptive standard which tells the obligation bearer precisely what measures to take and is expressed in terms of specific types of safeguarding measures that must be used (eg a requirement for an emergency stop button of specific dimensions, shape and colour).

***Structure*** (see definition of building or structure above).

**Substance** means any natural or artificial substance, whether in the form of a solid, liquid, gas or vapour. It includes a chemical entity, composite material, mixture or formulation and does not include an article.

**Supply** includes retail sale, wholesale, exchange, second hand sale, auction, lease, hire, hire-purchase and distribution, and includes any form of resupply.

**Systematic process** means a particular process, or series of steps, to be followed in the pursuit of safety (eg hazard identification, risk assessment and control).

**Testing**, in relation to a designed-product, means any form of examination or evaluation of the product, and may include scientific or technical assessment, and user trial or testing.

**Work with** means to manufacture or construct; to use, handle or operate; to store or transport; to install, erect, repair, maintain or clean; or otherwise encounter the item at work.



## **Appendix 2 - European Union Harmonised Standards for Machinery Safety**

**These are online at:**

**<http://www.europa.eu.int/comm/enterprise/newapproach/standardization/harmstds/reflist/machines.html>**

**(Print copy also provided to NOHSC)**

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### **Appendix 3 - European Union Essential Health and Safety Requirements**

**These are included in the Guide to the *Supply of Machinery (Safety)  
Regulations*. See Annex B, pages 17-58, online at:**

**<http://search1.dti.gov.uk/cgi-bin/cqcgi/@dti.env>**

**(Print copy also provided to NOHSC)**

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**Appendix 4 - Duties of Building Designers (OHSWR  
(SA): Schedule 2)**

**The Schedule is online at <http://www.workcover.com>. It is Schedule 2  
to the SA OHSW Regulations.**

**(Print copy also provided to NOHSC).**

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