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Pest Management Review
Final Report
September 1999

KPMG Consulting

This report contains 67 pages
Appendices contain 10 pages

Pest Management.doc

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1 Executive Summary

1.1 Introduction

The Competition Principles Agreement ('the Agreement'), endorsed by members of the Council of Australian Governments in April 1995, commits the Queensland Government to undertake by the year 2000 a review of all potentially anti-competitive legislation.

The Agreement requires that legislation should not restrict competition unless it can be demonstrated that the benefits to the community as a whole outweigh the costs of such restriction(s), and that the objectives of the legislation can only be achieved by restricting competition.

As the legislation governing pest management in Queensland contains various restrictions on competition, the Queensland Government is undertaking a review of that legislation in accordance with its commitments under the Agreement.

1.2 Review Process

The Legislative Projects Unit of Queensland Health has coordinated this review in conjunction with Queensland Health's Environmental Health Unit. Queensland Health called for submissions in March and forwarded the regulatory change options to key stakeholders.

KPMG were retained by Queensland Health to complete a Public Benefit Test (PBT) on the legislation governing pest management in Queensland. The PBT was completed as a minor review, utilising guidelines prepared by Queensland Treasury.

The PBT process involved:

- Identification and description of the current state and alternative reform options;
- Identifying the impacts of moving from the current state to the alternative states; and
- Assessing those impacts to arrive at an estimate of the net benefits of moving from the current state to each of the reform options.

1.3 Current Regulatory Arrangements

Pest control operators and fumigators ('pest management technicians') in Queensland are currently regulated under Part 4, Division 7 of the Health Act

1937 and Parts 10 and 12 of the Health Regulation 1996. Under the legislation, a person must not hold himself or herself out as a pest control operator[1] or use a fumigant[2] for the purposes of fumigation[3] unless the person is licensed.

To be licensed as a pest management technician, a person must satisfy licensing criteria which include that the person must be:

- a 'fit and proper' person;
- over 18 years of age; and
- competent to, and medically fit to, use pesticides or fumigants.

The legislation imposes various requirements on licensed pest management technicians. For example, licensees must:

- comply with quality and technical standards about equipment used in pest control/fumigation activities ;
- comply with standards for the storage, transport and disposal of chemicals;
- have an assistant present while conducting a fumigation (in the case of a fumigator); and
- use only registered pesticides and fumigants.

The legislation restricts competition as it creates barriers to entry to the industry and imposes restrictions on the conduct of business by pest management technicians.

1.4 The Pest Management Industry

The stakeholders in the pest management industry include:

- Consumers (domestic, commercial, industrial and government) and the community;
- Pest control operators and fumigators;

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[1] A pest control operator is defined as "… *a person who for payment or reward uses pesticides in or about premises for the purpose of controlling, destroying or preventing the growth or development of insects, arachnids or vermin but not a person who uses pesticides for agricultural, horticultural or pastoral purposes*."

[2] A fumigant is defined as "… *methyl bromide, hydrocyanic acid, carbon disulphide, ethylene dibromide or any other substance … used for the express purpose of fumigation*."

[3] The legislation excludes fumigation carried out for agricultural or horticultural purposes.

- Manufacturers, wholesalers and retailers of pesticides and fumigants;
- Queensland Health; and
- Local Governments.

The demand for pest management services varies according to the consumer sector serviced; however, demand generally reflects the prevailing economic situation.

With the exception of the recession in the early 1990s, industry growth has exceeded that of the economy generally since 1987/88 and is expected to continue on this growth pattern until 2002/03 (IBIS 1999b). From 1987/88 to 1997/98, the pest management industry turnover grew at an average annual real rate of 3.4 per cent.

There were 2,513 pest management technician licences issued in Queensland in 1998, with pest control operator licences accounting for 93 per cent of these, the balance being fumigator licences. Overall, there was a 7 per cent increase in the total number of pest management technician licences issued from 1997 to 1998. However, this increase was due solely to an increase in the number of pest control operator licences, as the number of fumigator licences fell by 26 per cent.

Separate pest control and fumigator licences may be issued to the same person, so the actual number of licensed pest management technicians in Queensland is less than the total number of licences issued. Anecdotal evidence suggests that between 25 and 40 per cent of fumigators are also licensed as pest control operators.

Pest control operator licences are available as restricted licences, which require no formal qualification but restrict the holder to eight pesticides, or unrestricted, which require formal qualifications from an approved course but places no restrictions on the number of pesticides the licensee may use. While this data is captured by the Queensland Health licence database, it is not able to report on the breakdown between restricted and unrestricted pest control operator licences.

The Financial Management Research Centre Survey of Business Profitability reveals that the average total income for all Australian pest control businesses was $151,510 in 1996/97, with a net profit (before operators' salaries and benefits) of 40 per cent of total income. The survey also notes that smaller businesses and those in metropolitan areas tend to have higher net profits. The annual costs of compliance with the Act were estimated at $379 for pest control operators and $689 for fumigators. Thus, compliance costs are only a small proportion of income.

1.5 Issues Associated with Pesticide and Fumigant Mismanagement

The mismanagement of pesticides and fumigants has a number of implications in terms of public and environmental health, workers' compensation and civil litigation. Pesticide and fumigant exposure has been linked with:

- Fertility problems and birth defects;
- Subclinical damage to the central and peripheral nervous system;
- Greater susceptibility to disease; and
- Some types of cancer.

The short term effects of contact with pesticides are well documented; however, less is known about the effect of long term exposure to pesticides. It is probable that some of the chemicals currently registered for use by pest management technicians in Queensland will be deregistered in the future, as more knowledge and data is gained about their long term effects.

When used properly in accordance with regulations, most pesticides and fumigants do not pose an environmental health risk. Issues arise, however, when pesticides and fumigants are not contained within the area of application and they become a source of exposure to other animal and plant life. The main environmental issues stemming from mismanagement of pesticides and fumigants are:

- Toxicity to animals, birds, aquatic organisms and other organisms; and
- Persistence in soil, water and vegetation.

Many pesticides and fumigants are moderately to highly toxic to wildlife, particularly aquatic organisms. The persistence of pesticides and fumigants in the environment affects the time that animals, birds, aquatic organisms and other organisms are potentially exposed to the pesticide or fumigant.

These public and environmental health effects place unnecessary burdens on other sectors of the economy, such as the workers' compensation, civil litigation and public health systems.

Exposure to pesticides and fumigants at the workplace leads to workers' compensation claims from both pest management technicians and the general public. In 1997/98, there were 40 workers' compensation claims made in Queensland relating to contact with animal and plant treatment chemicals with an average payout of $1900 per claim.

1.6 Policy Objectives

The policy objectives of the current legislation are not explicitly stated in the legislation. However, the objectives of regulating pest management activities are two-fold: firstly, to protect consumers, technicians and the community generally from the potential risks associated with exposure to chemicals, and secondly, to protect the community from the potential harmful effects of pests. Any legislation governing pest management technicians must meet these policy objectives.

1.7 Regulation in Other Australian States

Pest management technicians are regulated in all Australian States and Territories. With the exception of the Australian Capital Territory, the legislation in each State and Territory is similar to the system in Queensland in that they require pest management technicians to be licensed, competent, fit and proper persons, and specifies safety equipment and procedures that must be adhered to. Within the Australian Capital Territory, pest management technicians also require 'environmental authorisation'.

The Australian Capital Territory legislation is relatively new and National Competition Policy issues were considered in its development. The legislation in all other States and Territories, however, is still subject to review under National Competition Policy.

Furthermore, National Competency Standards have been developed for the pest management industry and adopted by the National Environmental Health Forum. It is expected that national competency standards will be incorporated into the regulatory regime in each State and Territory by the end of this year. Pest management technicians will then need to meet these competency standards to satisfy various licence requirements, such as 'competence' and 'fit and proper'.

1.8 Options for Achieving Policy Objectives

Options for achieving identified policy objectives were set out in the Public Benefit Test Plan:

Option 1 **Self Regulation**

No statutory regulation of pest management technicians. Under this option industry would self regulate through, for example, the development of a voluntary code of conduct.

Option 2 **Negative Licensing**

A 'negative licensing' approach which requires pest management technicians to take reasonable measures – such as compliance with a Code of Practice – to prevent adverse events that may

impact on public health. This model could also specify that pest management activities may only be conducted by those who have obtained recognised competencies / qualifications. Failure to comply would be an offence. If found guilty of an offence, the person could be fined and / or prohibited from carrying on the activity.

Option 3 **Licensing Based on Industry Competency Standards**

Pest management technicians would still be required to be licensed but licensing criteria would be based on National Competency Standards for pest management. In addition, the present two licences for pest control and fumigation would be amalgamated into a single licence with different endorsements, with the period of the licence extended from 12 months to five years (at the licensee's discretion).

Transitional arrangements would apply whereby:

- existing unrestricted licence holders would be taken to be licensed under the new system
- existing restricted licence holders (ie. who have no formal training and may only use certain pesticides) would continue to be licensed but would be required to upgrade their skills/qualifications and obtain an unrestricted licence within a specified period (eg. 5 years).

1.9 Public Consultations and Submissions

A crucial component of the conduct of a Public Benefit Test (PBT) is the consultation with all parties that have an interest in the legislation under review. This is required so that the views of all stakeholders are taken into consideration when assessing whether or not any restrictive provisions contained within the legislation or alternative options provide a net public benefit. Stakeholders were invited to comment on the options for regulatory reform.

The key issues arising from the submissions were:

- Stakeholders do not believe that the industry is mature enough to self regulate and Option 1 or Option 2, if implemented, would result in a lowering of standards (to reduce costs), thus compromising public health;

- Restricted licence holders place the welfare of the wider community at risk and are the cause of the 'bad image' of the industry because they do not have any formal training; and

- Stakeholders believe that national competency standards would deliver benefits to the industry from increased standards, increased consumer satisfaction, lower safety concerns for the community and greater environmental protection.

1.10 Public Benefit Test Analysis

To enable the net public benefit of each reform option to be assessed, the costs and benefits to the relevant stakeholders were identified and, wherever possible, quantified. Qualitative assessments were made where impacts could not be readily quantified.

1.11 Conclusion

Although not valued, the most significant impacts under each of the reform options are those affecting public and environmental health as they directly relate to the policy objectives. Option 1 and Option 2 do not effectively prevent incompetent pest management technicians from entering the industry and result in an increased risk of negligent or improper use of pesticides/fumigants which in turn results in an increased risk of harm to the public and the environment from accidental exposure to pesticides/fumigants. In addition, the effectiveness of pest management activity is likely to decrease under both of these options. Option 1 and Option 2 therefore do not meet the policy objectives.

It is considered that the costs associated with the above impacts far outweigh the benefits to the pest management industry under Option 1 and Option 2 (eg. minimal costs savings, increased employment levels in the short term only) and therefore an overall net cost to the public is produced under both options.

Option 3 incorporates all of the key features of the licensing model under the base case but also provides for increased training standards which are likely to result in increased competency levels within the pest management industry. This will potentially reduce the risk of harm to the public and the environment from accidental exposure to pesticides/fumigants and increase the effectiveness of pest management activity, thereby achieving the policy objective to a greater extent than the base case. Increased consumer confidence in the industry is likely which will, when coupled with the increased training opportunities under this option, provide benefits to employment. As well as these benefits, Option 3 also provides other benefits (eg. lower costs of locating information and competent technicians, reduced costs for regulatory and health agencies) while only resulting in a minimal increase in compliance costs to industry. Therefore, Option 3 produces a net benefit to the public.

Overall, Option 3 is considered to be the preferred reform option on the basis that:

- it achieves the policy objectives to a greater extent than the base case and produces a greater net public benefit than the base case

- Option 1 and Option 2 do not meet the policy objectives or produce a net public benefit.

2 Introduction

KPMG have been retained by Queensland Health to undertake a Public Benefit Test (PBT) on the legislation governing the pest management industry in Queensland. This report details the results of this PBT review.

The PBT review has been undertaken in accordance with the Queensland Treasury Public Benefit Test Guidelines and the Competition Principles Agreement.

The report is structured as follows:

- Chapter 3 presents the PBT methodology utilised in this review;
- Chapter 4 presents an overview of the Australian and Queensland pest management industries;
- Chapter 5 presents the risks of mismanagement of pesticides and fumigants;
- Chapter 6 reviews the objectives of the legislation, including an analysis of how the legislation restricts competition and imposes anti-competitive behaviour within the industry;
- Chapter 7 reviews what regulations are currently in place on the pest management industries in other Australian States and Territories;
- Chapter 8 outlines the consultation process and identifies key issues relating to major stakeholders which were highlighted during the consultation process;
- Chapter 9 presents an analysis of the regulatory change options identified in the PBT Plan, as well as the PBT analysis;

The supporting appendices present a summary of the health implication associated with pesticides and fumigants, and the legislation in other States and Territories of Australia.

2.1 Scope of Work Completed

In completing this Public Benefit Test, KPMG:

- Reviewed the legislation to identify the anti-competitive provisions;
- Reviewed the Public Benefit Test Plan and discussed options for reform with Queensland Health;
- Assessed the negative and positive impacts of each reform option;
- Identified non-valued impacts for each reform option;
- Assessed the extent to which the reform options achieved the policy objectives; and

- Recommended which reform option should be adopted based on quantitative and qualitative impacts.

KPMG engaged the services of Dr. Gordon Hooper, a specialist entomologist to assist in the analysis of reform options.

2.2 Warranties and Disclaimer

The statements and opinions in this report are given in good faith but rely upon information from the sources identified in this report and discussions with relevant stakeholders and industry experts. The report also draws upon the resources of KPMG. The report relies on information presented by the Public Benefit Test Plan and KPMG disclaim any liability for information presented within the Public Benefit Test Plan.

KPMG Consulting does not have any pecuniary interest that could reasonably be regarded as being capable of affecting their ability to give an unbiased opinion in relation to the matter. KPMG Consulting will receive a professional fee for the preparation of this report.

3 Public Benefit Test Methodology

3.1 Competition Principles Agreement

The Competition Principles Agreement ('the Agreement'), endorsed by members of the Council of Australian Governments (COAG) in April 1995, commits the Queensland Government to undertake a review and reform by the year 2000 of all State legislation that restricts competition.

The Agreement requires that legislation should not restrict competition unless it can be demonstrated that the benefits to the community as a whole outweigh the costs of such restriction(s), and that the objectives of the legislation can only be achieved by restricting competition.

In endorsing the Agreement, Governments agreed that:

- The objectives of legislation will be clarified;
- The nature of the restriction will be identified;
- The likely effects of the restriction on competition and the economy generally will be analysed;
- The costs and benefits of the restriction will be assessed and balanced;
- Alternative means for achieving the same result will be considered;
- Any new anti-competitive legislation must conform to the net public benefit principle; and
- Retained anti-competitive legislation must be reviewed at least once every ten years to determine if it is still required.

In assessing the costs and benefits of particular legislation, COAG agreed that the following matters, where relevant, be taken into account:

- Government legislation and policies relating to ecologically sustainable development;
- Social welfare and equity considerations, including community service obligations;
- Government legislation and policies relating to matters such as occupational health and safety, industrial relations and access and equity;
- Economic and regional development, including employment and investment growth;
- Interests of consumers generally, or of a class of consumers;
- The competitiveness of Australian business; and
- The efficient allocation of resources.

To fulfil its commitments under the Agreement, the Queensland Government is undertaking a review of the legislation governing the pest management industry in Queensland.

To comply with the Agreement, the review must determine whether the restrictive provisions within the Act create a net public benefit and whether the policy objectives are being achieved in the manner that least restricts competition.

3.2 Queensland Government and National Competition Policy

While the Queensland Government is committed to the Competition Principles Agreement, the Government also requires that any review of legislation must also take into account the Priority Outcomes for Queensland, namely:

- More jobs for Queenslanders;
- Building Queensland's regions;
- Skilling Queensland;
- Safer and more supportive communities;
- Better quality of life;
- Valuing the environment; and
- Strong Government leadership.

3.3 Queensland Treasury Public Benefit Test Guidelines

Queensland Treasury has prepared guidelines to assist Queensland State Government Departments to undertake Public Benefit Tests of legislation within their jurisdiction. Specifically, the Queensland Treasury Public Benefit Test Guidelines (the Guidelines) outline the steps associated with conducting a Public Benefit Test and how to present the results in a consistent and appropriate manner.

The steps required to undertake a Public Benefit Test, as outlined in the Guidelines, include:

Step 1	Identification and description of a realistic 'without change' or 'current' state.
Step 2	Identification and description of a realistic 'with change' or 'alternative' state.

Step 3 Identification of all major impacts of moving from the 'without change' to the 'with change' state.

Step 4 Valuation/Assessment of Impacts.

Step 5 Impact Analysis.

Step 6 Presentation of Results.

Key issues and requirements associated with each of the Public Benefit steps include:

Step 1
- Clarification of the problem being addressed and the objectives of the legislation.
- Identification of nature and relevance of the restrictions on competition.
- Description of the market structures which operate under the existing regulatory arrangements.

Step 2
- Describing the proposed change to the existing regulatory arrangements.
- Identification of future situation and its impact on market structures.
- Discussion of the consistency of the proposed changes with policy objectives.

Step 3
- Compare the 'without change' and the 'with change' states to assess the impact of moving from one state to another.
- Identify the impacts by stakeholder.

Step 4
- Quantify the market structures and economical / financial status of impacted groups in the 'without change' and 'with change' states, and identify the size and direction of change.
- Qualitatively identify and outline those impacts that have not been able to be valued in monetary terms, noting, where possible, magnitude and timing issues of potential impacts.

Step 5
- Define the time profile of each impact.
- Present, discuss and compare the impacts on all groups.

Step 6
- Present results.

In summary, the Public Benefit Test completed for this review has incorporated all of the above steps and has considered each of the key issues as identified by Queensland Treasury.

4 The Pest Management Industry

4.1 Introduction

The stakeholders in the pest management industry include:

- The chemical companies who manufacture pesticides and fumigants;
- The pest management technicians who provide pest control and fumigation services;
- Consumers (household, commercial, industrial and government) who purchase pest management services;
- Health Authorities; and
- Government regulators.

The Queensland pest management legislation is specific to the pest management technicians. Therefore, the following sections of this report focus primarily on the pest management technicians.

4.2 Pest Management Technicians

Pest management technicians include both pest control operators and fumigators. A pest control operator is defined in the legislation as:

> *"... a person who for payment or reward uses pesticides in or about premises for the purpose of controlling, destroying or preventing the growth or development of insects, arachnids or vermin but not a person who uses pesticides for agricultural, horticultural or pastoral purposes."*

A fumigator is a person licensed under the legislation to carry out fumigation, which is defined in the legislation as:

> *"... the treatment of a building, foodstuffs, produce or goods with a fumigant."*

Where a fumigant is defined as:

> *"... methyl bromide, hydrocyanic acid, carbon disulphide, ethylene dibromide or any other substance ... used for the express purpose of fumigation."*

The legislation governing fumigators excludes fumigation carried out for agricultural or horticultural purposes.

4.3 Market Characteristics

4.3.1 Structure

The pest management industry is characterised by a small number of major chemical companies selling to numerous pest management businesses, who in turn provide various services to the public, both at an individual consumer level and organisational level.

The pesticide manufacturing industry is highly concentrated, with the four top companies accounting for over 70 per cent of industry turnover (IBIS 1999a). The main market for these companies, however, is the agricultural sector. Sales to the non-agricultural pest management industry account for a small proportion of the pesticide manufacturing industry turnover.

There is much lower concentration among the businesses in the residential pest control industry. The two major businesses, RentoKil Australia Pty Ltd and WA Flick & Co (Holdings) Pty Ltd, have a combined market share of 42 per cent, while total market share of the top four pest control companies is less than 50 per cent (IBIS 1999b). The balance is distributed over a large number of small operators. No data is available on the concentration within the fumigation sector.

4.3.2 The Market

The pest management industry services three main sectors:

- Industrial, retail, hospitality and other commercial establishments;
- Households; and
- Government sector.

IBIS (1999b) identified the key characteristics of the pest control market:

- Demand can be affected by seasonal factors, plagues or drought;
- Demand is also affected by the level of residential and, particularly, non-residential construction activity;
- Domestic/residential pest control accounts for up to 50 per cent of the market;
- There is a significant amount of price-based competition, especially amongst the smaller businesses; and

- Three-quarters of services to the commercial and industrial sectors are provided on a contract basis.

4.4 Economic Profile

4.4.1 The Australian Industry

The following table presents turnover for the Australian pest control industry.

Australian Pest Control Industry Real Turnover, 1987/88 – 1997/98

	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98
Turnover[a]	185	195	206	200	193	196	206	220	236	251	264
Increase[b]	na	5.0%	6.0%	-3.0%	-3.5%	1.5%	5.2%	6.5%	7.5%	6.5%	5.0%

a. $1997/98 million
b. increase from previous year
Source: IBIS 1999b

The average annual rate of growth in real turnover was 3.4 per cent over the ten years to 1997/98, however, over the past five years, the industry growth rate has been consistently over five per cent. The industry was significantly affected by the recession in the early 1990s, with a decline in industry turnover in both 1990/91 and 1991/92, with only marginal growth recorded in 1992/93. Some sectors, however, were not as badly affected, especially those who service the food and hospitality sectors, as these sectors are required by legislation to maintain minimum hygiene standards. For those sectors that were adversely affected, the main reasons identified by IBIS (1999b) for reduced industry turnover were:

- A reduced number of clients resulting from bankruptcies;
- An increased level of price competition within the industry; and
- A reduced number of contracted visits.

IBIS (1999b) predicts that the industry will continue on the strong growth pattern of the last five years until at least 2002/03, and estimates that the average annual growth rate in real turnover from 1997/98 to 2002/03 will be 4.8 per cent.

The following table lists the estimated number of pest control businesses and technicians in Australia.

Pest Control Businesses and Technicians by State, 1996

	NSW	Vic	SA	Qld	Tas	WA	NT	ACT	Total

Businesses	761	360	260	850	34	437	25	24	2,751
Pest Control Operators	1,700	797	782	1,887	47	1,012	126	60	6,411
Fumigators	396	153	177	190	15	80	8	na	1,019[a]

a. Excludes Australian Capital Territory
na – not available.
Source: National Occupational Health and Safety Commission 1996

Most of the pest management activities occur in Queensland and New South Wales, as the climatic conditions of these States are favoured by pests. Queensland accounts for 29 per cent of pest control business employees, and New South Wales a further 27 per cent. New South Wales accounts for 39 per cent of fumigators and Queensland accounts for a further 19 per cent.

The average number of pest control operators is 2.3 per pest control businesses. Tasmania's average is significantly lower than this with just 1.4 employees per business, while the Northern Territory's average is significantly higher at five employees per business. The distribution of pest control businesses by number of employees is presented in the following table.

Size of Pest Control Businesses, Australia, 1994

	4 or less employees	Between 5 and 9 employees	Between 10 and 19 employees	Between 20 and 49 employees	50 or more employees
Proportion of total	78%	14%	5%	3%	<1%

Source: IBIS 1999b

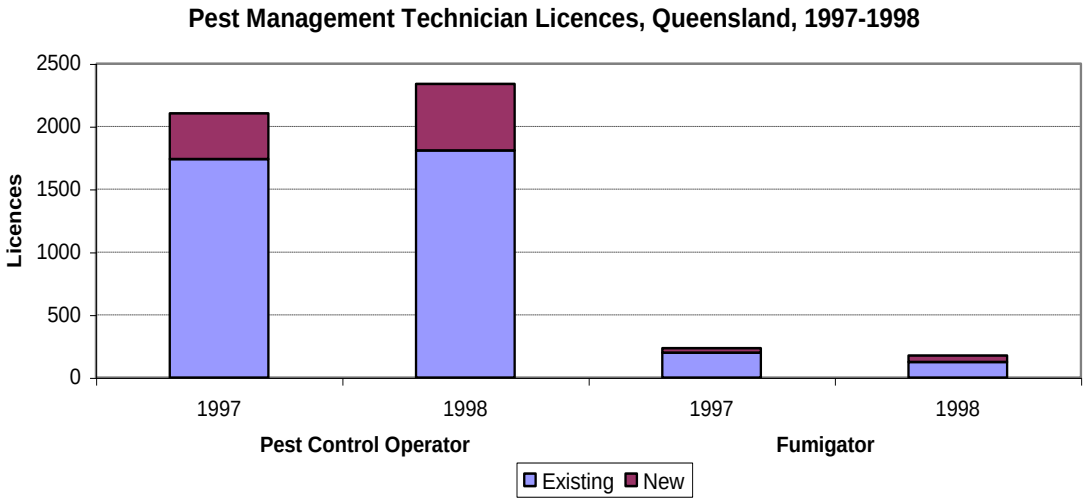
More than three-quarters of all pest control operations are small businesses, with four or less employees. In 1994, there were just two businesses employing more than fifty employees.

4.4.2 The Queensland Industry

In 1998, there were a total of 2,513 pest management technician licences issued in Queensland. Of these, 2,339 (93 per cent) were pest control operator licences and 174 (7 per cent) were fumigator licences. Pest management activities undertaken by the Crown are exempt from licensing, therefore the above data underestimates the actual number the pest management technicians operating in Queensland.

Separate pest control and fumigator licences may be issued to the same person, so the actual number of licensed pest management technicians in Queensland is less than the total number of licences issued. Anecdotal evidence suggests that between 25 and 40 per cent of fumigators are also licensed as pest control operators.

The following graph presents trends in the number of pest control and fumigation licences in Queensland.



While the total number of licences increased from 2,340 in 1997 to 2,513 in 1998, the number of licensed fumigators fell by 26 per cent over the same period. In 1998, the proportion of licensed fumigators that were new licences was 28.7 per cent, up from 15.7 per cent in 1997. This suggests that more than a 100 existing licences were not renewed in 1998.

The number of licensed pest control operators increased by 11 per cent, from 2,105 in 1997 to 2,339 in 1998. However, the number of renewed licences increased by only 70, suggesting that almost 300 existing licences from 1997 were not renewed in 1998. Licence category changes from restricted to unrestricted, for example, may account for some of these licences. There is no data available on what proportion of pest control operator licences are unrestricted.

Most licences are issued in the metropolitan regions of Brisbane South (18.4 per cent of licences issued), Brisbane North (12.5 per cent), Gold Coast (12.0 per cent) and Sunshine Coast (13.7 per cent).

The licences issued in each region are valid throughout Queensland, so the number of licences issued in each region may not represent the actual number of pest management technicians operating in each region.

The regional distribution of licensees is presented in the following table.

Pest Management Technician Licences Issued by Region, 1998			
Region	Pest Control Operator	Fumigator	All Pest

	Total Licences	New Licences	Total Licences	New Licences	Management Technicians
Brisbane North	287	67	28	14	315
Brisbane South	424	84	39	20	463
Central	140	43	7	-	147
Central West	15	2	-	-	15
Darling Downs	109	24	20	3	129
Gold Coast	296	65	6	1	302
Mackay	71	11	3	1	74
Northern	151	42	11	2	162
Peninsula	109	29	13	2	122
Sunshine Coast	331	66	14	2	345
South West	20	1	-	-	20
Wide Bay	200	28	9	2	209
West Moreton	124	35	13	3	137
Other	62	32	11	-	73
Total	2,339	529	174	50	2,513
Source: Queensland Health 1999					

4.4.3 Profitability of Pest Control Businesses

Pest control businesses have consistently achieved a net profit of over 30 per cent of total business revenue. The following table presents profitability information collected by IBIS.

Net Profit of Pest Control Businesses, 1990/91 – 1995/96						
	90/91	91/92	92/93	93/94	94/95	95/96
Net Profit[a]	39.4%	33.2%	30.5%	30.9%	na	32.0%
a. Net business income as a proportion of total business receipts. na. Not available Source: IBIS 1999b						

The fall in net profit in 1991/92 and 1992/93 was the result of increased price competition and reduced margins experienced during the recession (IBIS 1999b).

The Financial Management Research Centre (FMRC) conducts national surveys for a number of industries and presents data on their relative financial performance. The following table presents a summary of the key findings of the FMRC survey of pest control contractors for 1996/97.

Key Financial Indicators Associated with Australian Pest Management Businesses, 1996/97			
Key Indicator	By Business Turnover	By Location	All Firms

	Less than $150,000	$150,000 or more	Metropolitan and Large Regional	Other	Average
Average Total Income	$74,531	$266,977	$141,975	$157,866	$151,510
Less Materials Used	$9,696	$67,385	$17,506	$34,131	$27,120
	(13.01%)	(25.24%)	(12.33%)	(21.62%)	(17.90%)
Gross Profit	$64,835	$199,592	$123,050	$123,735	$124,390
	(86.99%)	(74.76%)	(86.67%)	(78.38%)	(82.10%)
Less Overheads	$29,216	$124,198	$64,840	$62,738	$63,831
	(39.20%)	(46.52%)	(45.67%)	(39.77%)	(42.13%)
Net Profit (bos)	$35,618	$75,421	$59,630	$60,952	$60,559
	(47.79%)	(28.25%)	(42.00%)	(38.61%)	(39.97%)
Personnel (FTE)	1.32	3.09	2.38	1.67	1.97

Bos – before owners' salaries and benefits
FTE – Full Time Equivalent
Source: FMRC 1998

As shown in the above table, the results of the FMRC survey indicates that the average net profit for all pest control businesses was 40 per cent of total income. Smaller firms, and those in metropolitan and large regional centres, achieved above average net profit, which stemmed mainly from lower materials expenses than those incurred by other firms. Large pest control businesses had a lower net profit, resulting from high materials and overheads expenses.

4.5 Summary

In 1998, Queensland Health had on issue 2,513 pest management technician licences, of which 93 per cent were pest control operator licences and 7 per cent were fumigator licences. However, this does not represent the actual number of persons who are licensed pest management technicians since both a pest control operator and fumigator's licence may be issued to the same person, and persons employed as pest management technicians by the Crown do not need to be licensed.

The pest management industry services the consumer, industrial, commercial and government sectors. Demand for pest management services varies according to the sector serviced; however, demand generally reflects the prevailing economic situation.

Turnover in the pest management industry has grown in excess of five per cent annually in recent times. On average, pest management businesses achieve a net profit equivalent to 40 per cent of turnover and employ 2 FTEs.

5 Issues Associated with Pesticide and Fumigant Mismanagement

5.1 Introduction

This chapter presents the conclusions from a number of studies into the health effects of exposures to pesticides and fumigants, the costs arising from Workers Compensation claims and litigation cases resulting from negligent use of pesticides and fumigants.

5.2 Health Implications

A number of studies have highlighted the risks associated with pesticide exposure, including:

- Four cases of multiple birth defects were linked back to chlorpyrifos exposure during pregnancy (Sherman 1996);
- Chronic subclinical damage to the central and peripheral nervous system among people previously poisoned by organophosphates (Steenland 1996);
- Some organochlorine compounds are suspected of increasing the risk of breast cancer (Hoyer et al 1998);
- A study of breast adipose tissue found higher concentrations of organophosphates in those with breast cancer (Taylor et al 1999);
- The results of a study on methyl bromide and sulfuryl fluoride exposure suggested that ‘employment as a structural fumigation worker is associated with some adverse effects on the central and peripheral nervous systems (Calvert et al 1998); and
- Eight cases of non-occupation exposures from domestic application of the most commonly used organophosphate pesticides can cause overt genotoxic effects. They are also neurotoxic and immunotoxic (Lieberman et al 1998).

With the exception of sulfuryl fluoride, the chemicals mentioned in the above studies are registered for use by pest management technicians in Queensland.

The following cases were cited in the *Draft National Occupational Health and Safety and Public Health Certification Standard for Pest Management Technicians*, a discussion paper prepared by the National Occupational Health and Safety Commission in 1996:

- Maroni and Fait (1993) reviewed published literature from 1975-91 comprising 440 papers and identified a number of pesticides where the evidence of human health

effects from prolonged exposure is well established and many more cases where evidence exists but requires further information;

- The International Agency for Research on Cancer concluded that spraying and application of non-arsenic insecticides entail exposures that are probably carcinogenic to humans;

- A US study indicated that 'commercial pesticide applicators encountered substantial exposures' to pesticides and that 'proper precautions for reducing exposures are not always followed. Practical steps, in particular the use of good work practices, may be taken to reduce exposure in this population.' Biological monitoring of this group suggested that absorbed doses were not related to the amount of pesticides handled but rather 'other factors, such as work practices, were greater determinants of absorbed doses';

- A study of agricultural pesticide applicators exposed to a variety of pesticides (organochlorines, organophosphates and synthetic pyrethroids) had significantly more chromosomal aberrations than control subjects;

- A group of 168 pesticide applicators in Rome had increased risk of liver and bile duct cancer (no other cancer risks were statistically significant); and

- A study of German pest management technicians showed higher skin melanoma and cancer rates among pest management technicians than in the German population.

The United Nations Environment Programme (UNEP) has identified twelve chemical compounds that are 'powerful threats to human and wildlife health on a global basis' (Fischer 1999). The compounds all fit into the Persistent Organic Pollutant (POP) class and are, as their name suggests, particularly persistent in the environment as they are resistant to photolytic, biological and chemical degradation. Nine of the twelve compounds are used in pesticides.

Studies have indicated that high levels of exposure to POPs over the long term may contribute to:

- Increasing rates of birth defects;

- Fertility problems;

- Greater susceptibility to disease;

- Diminished intelligence; and

- Some types of cancer.

Of the nine compounds used in pesticides, chlordane, aldrin, DDT, dieldrin and heptachlor were previously registered for use in Australia, but have since been banned ('deregistered'). A sixth compound – mirex – is still registered for use as a termiticide in Western Australia.

The short term effects of contact with pesticides are well documented; however, less is known about the effect of long term exposure to pesticides. It is probable that some of the chemicals currently registered for use by pest management technicians in Queensland will be deregistered in the future, as more knowledge and data is gained about their long term effects.

The Extension Toxicology Network (EXTONET) provides Pesticide Information Profiles for many chemical compounds. A review of 23 pesticides and fumigants commonly used in Queensland revealed:

- Sixteen of the compounds were moderately to highly toxic; and
- Poisoning can be fatal for eleven of these compounds.

The most common symptoms of acute toxicity were nausea, vomiting, diarrhoea, weakness, salivation, imbalance, blurred vision and difficulty breathing. The Pesticide Information Profiles also highlight the lack of information available on the effects, other than acute toxicity, of pesticide and fumigant exposure.

A summary of the toxicity of commonly used pesticides and fumigants on human health is presented in Appendix A.

5.3 Environmental Issues

When used properly in accordance with regulations, most pesticides and fumigants do not pose an environmental health risk. Issues arise, however, when pesticides and fumigants are not contained within the area of application and they become a source of exposure to other animal and plant life. The main environmental issues stemming from mismanagement of pesticides and fumigants are:

- Toxicity to animals, birds, aquatic organisms and other organisms; and
- Persistence (or time taken to break down) in soil, water and vegetation.

The persistence of pesticides and fumigants in the environment affects the time that animals, birds, aquatic organisms and other organisms are potentially exposed to the pesticide or fumigant.

The EXTONET Pesticide Information Profiles revealed that:

- 17 compounds were moderately to highly toxic to aquatic organisms, including fish;
- 16 compounds were moderately to highly toxic to bees;
- Six compounds persisted in soil for at least a month;
- Five compounds persisted in water for at least a month; and
- Three compounds were highly toxic to birds.

A summary of the toxicity of commonly used pesticides and fumigants and their persistence in the environment is presented in Appendix A.

5.4 Workers' Compensation

The following table presents details of workers compensation claims from Queensland employees working with animal and plant treatment chemicals.

Number of Worker Compensation Claims, Queensland			
	1995/96	1996/97	1997/98
Single Contact with Chemical or Substance	7	8	7
Long Term Contact with Chemical or Substance	18	9	10
Other (eg injury from falls & lifting heavy objects)	30	23	23
Total	55	40	40
Source: Qstats			

The total payments made for all claims was $48,010 in 1995/96, $77,426 in 1996/97 and $78,150 in 1997/98. The average payout in 1995/96 was $873 per claim, while the average payout in 1996/97 and 1997/98 was over $1,900. Under the assumption that payouts are similar irrespective of type of claim, the cost of chemical exposure was $21,825 in 1995/96, $32,912 in 1996/97 and $33,218 in 1997/98.

A number of workers' compensation claims have also been processed through the legal system, including:

- Edwin Charles Lowe and Commission for the Safety, Rehabilitation and Compensation of Commonwealth Employees and Reserve Bank of Australia No. N89/344 AAT No. 7438 Compensation. The tribunal found that the applicant was incapacitated as a result of exposure to pesticides at the workplace and compensation was payable.
- State of South Australia (Education Department) v. Herman Karl Willi Kranich [1995] SAWCAT 166 (20 DECEMBER 1995). Kranich was found to be incapacitated due to pesticide exposure at his place of employment.

- Robin Margaret Grant v. ComCare Nos. Q92/526 and Q95/641 AAT No. 11520 Number of pages - 10 Workers Compensation. Ms Grant was found to be entitled to workers' compensation for injuries resulting from pesticide exposure at work.

5.5 Litigation

When pesticides and fumigants are not used effectively or properly, there is the potential for litigation to occur. The following are a number of such cases within Australia:

- The Green Team (W.A.) Pty. Ltd. v. Brulee Pty Ltd., Shirley Margaret White and Geoffrey Thomas White No. WAG198 of 1992 FED No. 786/95 Trade Practices - Contract - Tort (1995) Aust Torts Reports 81-362 (1995) ATPR 41-435. The pest control operator was found negligent in carrying out a termite inspection and ordered to pay $26,000.

- Costa Vraca Pty Ltd v Berrigan Weed & Pest Control Pty Ltd & Anor [1998] 693 FCA (15 June 1998). The pest control operator was found negligent and ordered to pay a sum of $884,785. Costa Vraca lost a crop of tomatoes as a result of herbicide residues in the spraying rig used by Berrigan Weed & Pest Control.

- State Pollution Control Commission v. W.A. Flick & Co. Pty Ltd [1989] NSWLEC 131 (6 November 1989). Flick & Co. pleaded guilty to polluting nearby waters, resulting from termiticide escaping from the premises being treated. Flick & Co. were fined $20,000 and ordered to pay court costs of $2,300.

- Environment Protection Authority v. William Barry Prestwidge [1998] NSWLEC 110 (29 May 1998). Prestwidge, a licensed pest control operator, was fined $2,500 and ordered to pay court costs for being in possession of a drum of unregistered pesticide. The pesticide was believed to be chlordane, which is no longer registered in New South Wales.

- Von Schulz & Anor v Morriello & Ors [1998] QCA 236 (21 August 1998). Landlord and pest control operator each ordered to pay $20,000 to tenants for damages resulting from exposure during termite treatment.

- John Adrian Brugmans v. The Commonwealth of Australia No. SC 1638 of 1988 Number of pages - 10 Negligence - Damages [1996] ACTSC 42 (17 May 1996). Mr. Brugman's supervisor was found negligent in allowing Mr. Brugmans to decant a pesticide, a procedure he was not familiar with. The Commonwealth of Australia, as the employer, was ordered to pay damages of $20,690.

5.6 Extreme Hazard

The Australian Bureau of Statistics includes deaths resulting from pesticide exposure in data for all accidental poisonings by 'drugs, medicants and biologicals'. Since 1990, 282 Queenslanders have died from 'accidental poisonings'. Pesticide exposure accounted for a small proportion of these deaths.

5.7 Conclusion

The health risks associated with the misuse of pesticides and fumigants are well documented. Through the course of this review we have been unable to identify a comprehensive summary of the health incidents associated with the misuse of chemicals used in pest management in Australia. However, the results of our research indicates that there are numerous accounts of health and environmental incidents as a direct result of negligent use of chemicals for pest management purposes, and that significant costs are incurred by a range of stakeholders.

6 The Legislation

6.1 Policy Objectives

Pest management technicians, who are defined here to include pest control operators and fumigators, are currently regulated through Part 4, Division 7 of the Health Act 1937 and Parts 10 and 12 of the Health Regulation 1996.

The policy objectives of the current legislation are not explicitly stated in the legislation, but the policy objectives of regulating pest management activities are two-fold: firstly, to protect consumers, technicians and the community generally from the potential risks associated with exposure to chemicals, and also to protect the community from the potential harmful effects of pests.

As outlined in the previous chapter, there are serious implications of mismanagement of pesticides and fumigants. The policy objectives address these implications.

How the policy objectives are currently achieved is outlined in the following sections.

6.2 Current Legislation

The Health Act 1937 and Health Regulation 1996 address the policy objectives by:

- Prohibit persons holding themselves as pest management technicians unless they are licensed;
- Regulating the application, renewal and conditions of licences;
- Limiting which pesticides and fumigants may be used;
- Setting safety standards and precautions; and
- Regulating the storage, transport and disposal of pesticides and fumigants.

In addition, pest management technicians are also subject to regulation under the Workplace Health and Safety Act 1995 and the Environmental Protection Act 1994. The objective of the Workplace Health and Safety Act 1995 is to

> *'... prevent a person's death, injury or illness being caused by a workplace, by workplace activities or by specified high risk plant.'*

The objective of the Environmental Protection Act 1994 is to

... protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.'

Both these Acts are binding on all persons and are not affected by the operation of the pest management legislation, which is the focus of this review.

6.3 Scope of the Legislation

A pest control operator is defined in the Health Act 1937 as:

"... a person who for payment or reward uses pesticides in or about premises for the purpose of controlling, destroying or preventing the growth or development of insects, arachnids or vermin but not a person who uses pesticides for agricultural, horticultural or pastoral purposes."

A fumigator is a person licensed under the legislation to carry out fumigation, which is defined in the legislation as:

"... the treatment of a building, foodstuffs, produce or goods with a fumigant."

A fumigant is defined as:

"... methyl bromide, hydrocyanic acid, carbon disulphide, ethylene dibromide or any other substance ... used for the express purpose of fumigation."

The legislation governing fumigators excludes

"*... fumigation carried out by means of a fumigant which is exclusively used for agricultural or horticultural purposes."*

and

"... fumigation of a structure having an internal space measurement of less than 3 m^3, or to a grain stack, grain tank, or grain bulkhead which does not exceed 15 m^3 internal measurement, provided that such grain stack, grain tank, or grain bulkhead is situated upon the farming property of the owner thereof."

Both these exemptions are subject to the condition that the person conducting the fumigation does so with all due and care so as to not endanger human life.

Pest control and fumigation activities for horticultural, agricultural and pastoral purposes are covered under the Agricultural Chemicals Distribution Control Act 1966. Under this legislation, which is administered by the Queensland Department of Primary Industries (QDPI), commercial operators also require a licence.

Under the current regulatory framework pest management in both rural (QDPI) and urban (QH) environments are administered by complementary State Government authorities. However under Options 1 and 2, responsibility for the regulation of pest management in urban areas would be transferred to the industry.

6.4 Restrictions to Competition

The legislation currently requires pest management technicians be licensed, and to obtain a licence the applicant must:

- Pay an application fee;
- Be a 'fit and proper' person;
- Be competent; and
- Be medically fit to use pesticides and fumigants.

Applications for a pest management technician licence must be accompanied by an application form, application fee, copy of examination report, medical certificate and a record of qualifications.

The application fees are currently $65 for a pest control operator and $28 for a fumigator. Licences may be renewed annually for the same fees.

Competence is assessed through an approved examination administered by Queensland Health and a statement of formal qualifications. There are currently two types of licences:

- Restricted, which allows the licensee to use up to eight pesticides and requires no formal training; and
- Unrestricted, which allows the licensee to use any number of pesticides, but the licensee must have formal qualifications from an approved course and have at least 200 hours work experience.

In order to have obtained the 200 hours working experience, an applicant for an unrestricted licence must currently be a restricted licence holder.

The approved course is currently CNFAS027 Urban Pest Control, but will be replaced by the end of 1999, following the adoption of National Competency Standards for the pest management industry by the National Environmental Health Forum. Three courses have been developed based on the National Competency Standards:

- Certificate II in Asset Maintenance (Pest Management – Technician);

- Certificate III in Asset Maintenance (Pest Management – Technical); and
- Certificate IV in Asset Maintenance (Pest Management).

Each Certificate has a combination of business skills units and technical skills units. However, only a subset of these units – Unit 5 'Modify environment to manage pests', Unit 6 'Apply pesticides to manage pests', and Unit 18 'Maintain an equipment and consumable storage area' (all from Certificate II) – are required to qualify for an unrestricted licence. Fumigators require Unit 6 'Apply pesticides to manage pests', and Unit 11 'Eradicate pests through fumigation' from the Level III certificate.

These courses are available through the Grovely Campus of the Brisbane Institute of TAFE and Open Learning. Amalgamated Pest Control is a registered training organisation for these courses, but provides training only for its own employees.

Once the pest management technician has obtained a licence, there are a number of licence conditions that need to be met, namely that the other requirements of the legislation be adhered to:

- Authorities must be notified of accidents, spills and injuries;
- Only registered pesticides and fumigants may be used;
- Procedures for the safe storage, transport and disposal of pesticides and fumigants;
- Labelling of pesticide and fumigant containers; and
- In the case of a fumigator:
    - Have an assistant present while conducting a fumigation;
    - Provide for adequate ventilation of buildings fumigated;
    - Technical standards for mask and respiratory equipment;
    - Standards for first aid and resuscitation equipment; and
    - Safety protocols before, during and after fumigation.

If the licensee does not comply with these regulations, the licence may be suspended or cancelled.

These conditions impose restrictions on competition because they create barriers to entry to the industry and impose restrictions on the conduct of business by industry participants.

6.5 The 'Without Change' State

The without change state is characterised by the current requirements of the Act. For each of the requirements of the current legislation, there are positive and negative impacts for the key stakeholders.

While consumers potentially pay higher prices for pest management services, consumers are also beneficiaries under the current legislation because licensing:

- Provides a mechanism for minimising search costs for appropriate technicians;
- Minimises health and safety risks through ensuring technicians have knowledge in dealing with potentially dangerous chemicals; and
- Ensures (mostly) effective pest control services, thereby reducing the number of complaints regarding the actions of technicians.

Pest management technicians also derive a number of benefits under the current system:

- Licensing safeguards the industry against poor public perception;
- The provision of safety and operational procedures ensures technician's safety; and
- Licensing ensures that technicians' details are listed on the Poisons Information Licensing System in case of an emergency.

The price that pest management technicians pay for these benefits is reduced profitability due to licence fees and compliance costs.

The current legislation has little effect on the manufacturers of pesticides and fumigants. While the sales of pesticides and fumigants is increased through enhanced technician reputation, they are limited by the restrictions on entry into the pest management industry.

Queensland Health incurs a cost in administering and policing the current legislation. However, licence fees collected and the minimisation of public health risks offset this. Furthermore, licensing ensures that the government can monitor what pesticides and fumigants are being used, and by whom, in case issues arise concerning particular pesticides or fumigants.

6.6 Cost of Compliance of the Act

6.6.1 Costs to Pest Control Operators

The estimated cost of compliance with current legislation requirements for pest management technicians is presented in the following table.

Initial and Amortised Costs of Compliance of the Health Act By Type of Pest Control Technician

	Pest Control Operator		Fumigator	
	Start Up Costs	Annual Equivalent	Start Up Costs	Annual Equivalent
Licence Fees	$65	$65	$28	$28
Training	$700	-	$700	-
Chemical Storage	$1,600	$320	$1,600	$320
Safety Equipment	-	-	$379	$246
First Aid Equipment	-	-	$418	$84
Other	$60	$12	$65	$13
Total Costs	$2,425	$397	$3,190	$690

Source: KPMG Consulting 1999

Based on discussions with a number of industry participants, initial start up costs for pest control operators and fumigators are estimated at $2,425 and $3,190, respectively, while on an annual equivalent basis were estimated to be $379 for pest control operators and $690 for fumigators. These costs are inclusive of estimates of maintenance costs for the equipment required by the legislation.

Given these costs, the total cost of compliance for the whole industry was estimated at $1.6 million in 1998, of which approximately 88 per cent was attributable to pest control operators. With an estimated industry turnover for the pest control industry alone at $76.6 million, the compliance costs represent just two per cent of the pest management industry turnover.

We note, however, that these cost estimates are likely to overestimate the true cost of compliance for the industry. That is, given the nature of the work undertaken by pest management technicians, it is likely that a level of costs associated with personal safety would still be incurred in the absence of any legislation. The current annual licence fees are $65 for pest control operators and $28 for fumigators. This represents less than 0.1 per cent of total income for an average pest control business, and is thus negligible. For most pest management technicians, training is a one-off cost and thus also negligible over the working life of the pest management technician.

Several requirements under the legislation were not costed as they could be achieved with minimal or no cash outlays. These included storage containers for pesticides and fumigants, the disposal of these containers, disposal of excess pesticides and fumigants, and labelling of containers.

Other costs that were not valued included:

- The opportunity cost of inspections (of premises for pesticide storage, vehicles and operational equipment by Environmental Health Services Officer); and
- Requirements to keep written records of fumigations undertaken.

The legislation requires that fumigators be accompanied by another person over the age of 18 years while carrying out fumigations. No allowance was made for this in the costs as discussions with Queensland Health suggest that the average job requires two persons and in most cases the second person is also a licensed fumigator.

These costs of compliance are passed on to consumers through higher prices paid for pest control and fumigation services, albeit in a competitive market.

6.6.2 Costs to Government

The costs to government in policing and administration requirements were estimated at $332,000 per annum. Approximately $282,000 (85%) of these costs are attributable to staff costs, including salaries, oncosts and administrative support. Other costs include safety equipment and vehicles for inspectors, computers and costs of prosecutions.

6.6.3 Consumer and social costs

Direct costs of compliance with the Act to consumers is anticipated to be marginal. However, consumers are likely to bear, or partially bear, costs of compliance through higher pest management fees (industry participants) and taxation (government). While this is true in the broader sense, it is likely these costs on a per unit or per person basis are negligible.

6.6.4 Summary

The industry participants (pest management technicians) and the government (Queensland Health) bear most of the cost of compliance of the Act. However, the overall level of those costs is considered immaterial, both at the industry and individual stakeholder level.

6.7 Market Failure and Regulation

Market failure occurs when the mechanism by which a competitive economy allocates resources operates inefficiently. In adjusting the market mechanism to allocate resources efficiently, it is assumed that net benefits will accrue to the economy as a

whole, albeit generating both winners and losers. Economists generally accept market failure may be remedied through government intervention, usually through regulation.

The essence of regulation is the explicit replacement of competition with governmental orders as the principal institutional device for assuring good performance. Government, via the regulatory agency, determines through licensing who shall be permitted to operate within the market, and generally imposes limitations on their ability to compete. Through this action, the two prime requirements for competition, freedom of entry and independence, are deliberately replaced (Kahn, 1988, pp.20-21).

Market failure is generally linked to issues of:

- *Externalities*: is an effect of one economic agent on another that is not taken into account by normal market behaviour, and generally occurs when all costs associated with resources utilised in production are not accurately incorporated into the pricing of the product. These impacts may cause a misallocation of resources due to the divergence between private and social marginal cost.
- *Public goods*: goods and services that are provided by the Government for the benefit of all or most of the population. Unlike private goods, there is no direct link between the consumption of a social product and payment for it, while consumption of a public good by an individual provides benefits on a non-exclusive basis. Social products are not paid for by an individual consumer buying it in the market place, but rather through general taxation receipts.
- *Asymmetry of information*: the basic market model assumes that information about the prices and quality of goods and services is easily accessible and available at little or no cost. In reality however, this is not the case, which can result in inefficient market outcomes.
- *Natural monopolies*: a situation where economies of scale are so significant that costs are only minimised when the entire output of an industry is supplied by a single producer so that supply costs are lower than under conditions of perfect competition and oligopoly.

Externalities and asymmetry of information are potential sources of market failure in the pest management industry.

The pest management industry can be a source of negative externalities. Inadequate safety precautions during pesticide applications or fumigations could result in the pest management technician, community and environment being exposed unnecessarily to pesticides and fumigants. It could be argued that in the absence of legislation the pest management technician has little incentive to abate community and environmental health risks. As discussed earlier, the health implications of exposure to these chemicals are serious and there may be negative flow-on implications to society if they are improperly handled or used.

In the absence of licensing, there may be problems associated with asymmetry of information. Consumers may not have full information on the ability of the pest management technician to carry out effective pest control or fumigation. Furthermore, the market participants do not have complete information on the health implications of pesticide and fumigant exposure.

7 Pest Management Legislation in Other States

7.1 Introduction

The purpose of this chapter is to review the comparable legislation other States and Territories of Australia.

Details of the existing legislation in each State and Territory are presented in the following sections. However, it should be noted that this legislation is subject to National Competition Policy reviews in the near future. The only exception is the Australian Capital Territory legislation, the Environment Protection Act 1997, as this legislation has only recently been enacted and NCP issues were considered in its development.

A summary of the legislation is provided in Appendix B.

7.2 New South Wales

The New South Wales (NSW) pest management industry is regulated under both the Occupational Health and Safety Act 1983 and the Pesticides Act 1978. The administration and licensing body is the Workcover Authority of New South Wales.

The Occupational Health and Safety (Pest Control) Regulation 1988, which aims to protect the health, safety and welfare of people at work, covers both pest control and fumigation. The use of pesticides or dangerous chemicals (for fumigation) for agricultural, pastoral or horticultural purposes are exclusions to this legislation.

This Regulation governs the licensing, exemptions, qualifications, storage and transport of pesticides, applicable pesticides, safety procedures and equipment, reporting of accidents and record keeping.

There are four classes of licences:

- Certificate of Registration (of pest controller's business);
- Pest Control Operator's Licence;
- Trainee Pest Control Operator's Permit; and
- Fumigation Permit.

Applicants for a Certificate of Registration must be 'fit and proper' persons and at least 18 years old. The application and annual renewal fee is $250. The holder of this licence is obligated to employ only licensed pest control operators, where these

employees use pesticides (ie act as pest control technicians). The holder does not require a pest control operator's licence or a permit to own a pest control business; however, they do require a licence or permit if they intend to carry out pest control activities personally.

The legislation requires that an applicant for a trainee permit be undertaking or completing an approved course. The application fee for a trainee permit is $25. Trainee pest control operators are required to work under the supervision of a licensed Pest Control Operator.

To obtain a Pest Control Operator's licence, the applicant must have completed an approved course, had six months practical experience as a trainee pest control operator, be competent and a fit and proper person. The formal qualification and trainee permit requirements may be waived where the person has at least two year's prior experience. The application fee for a Pest Control Operator licence is $200. The licence is valid for two years, at which time it may be renewed for a fee of $200.

Applicants for a fumigation permit are required to be fit and proper persons, and have a medical certificate showing that the applicant is medically fit to use dangerous chemicals for the purpose of fumigation. The application fee is $35, and subsequent renewal fees are $35 for an annual permit and $100 for a triennial fumigation permit.

The Pesticides Act 1978 and its subordinate Regulation govern the use and possession of pesticides, prevents the consumption and export of certain foods containing prohibited pesticide residues and provides for licensing of aerial pesticide and fertiliser sprays.

7.3 Victoria

The Victorian pest management industry is regulated through Part 5 Division 2A – Pest Control Operators of the Health Act 1958 and Health (Pest Control Operators) Regulations 1992, the latter of these has a sunset clause dated 27 October 2002. The licensing body is the Environmental Health Unit within the Department of Human Services. This legislation covers licensing, records, vehicles and equipment and annual medical examinations.

The licences are issued at three levels:

- Trainee;
- Technician; and
- Technical Manager.

Trainees are not required to hold formal qualifications; however, they are required to pass a test and be employed by a registered pest control business, where they are supervised by a licensed technician. Furthermore, the Trainee is required to undertake and pass an approved training course within a specified time period.

Evidence of formal qualifications is required for licences at the Technician and Technical Manager level. A Technical Manager's licence is required to register a pest control business or to act as technical manager in another pest control business. Application and annual renewal fees are $115 for a Technician and $230 to register a business.

Licences issued under these regulations may be endorsed for specific types of pest control:

- Control of arthropods and rodents;
- Control of weeds and pest plants;
- Control of vermin and pest animals;
- Control of pests by fumigation; and
- Other.

A Trainee licence can have only one endorsement, while Technicians and Technical Managers may have more than one endorsement.

The regulations do not apply for a number of herbicides that are applied with handheld hand-pumped equipment with a tank capacity of ten litres or less.

7.4 South Australia

The South Australian pest management industry is regulated through the Controlled Substances Act 1988 and Controlled Substances (Pesticides) Regulations 1988. The licensing body is the Environmental Health Branch of the South Australian Health Commission. This legislation provides for the licensing, exemptions, qualifications, storage and transport of pesticides, applicable pesticides, reporting of accidents and record keeping.

There are four classes of licences:

- Pest Controller;
- Grade 3 Pest Control Operator;

- Grade 2 Pest Control Operator; and
- Grade 1 Pest Control Operator.

There is no specific licence category for fumigators. The schedule of approved pesticides, however, includes a number of fumigants and pest control work is defined as 'the use or handling of pesticides for, or in connection with, the control or destruction of pests'. Hence, the licences cover both pest control and fumigation.

A Pest Controller's licence is required to carry on a pest control business. Applicants must have 'adequate knowledge' of the regulations and general practices relating to the conduct of a pest control business and of pest control work. Furthermore, they must be 'fit and proper' persons. To personally conduct pest control work requires a pest control operator's licence also. Application and annual renewal fees are $177 each.

A Grade 3 Pest Control Operator's licence is the highest grade of the Pest Control operator licences. This requires qualifications from an approved course and at least two years practical experience. A Grade 2 licence also requires formal qualifications, but only 12 months practical experience. Applicants for a Grade 1 licence are only required to have 'agreed to undertake' a course and be employed by a licensed pest controller. Holders of Grade 1 or Grade 2 licences are required to work under the personal supervision of a Grade 3 licensee. For each Grade of pest control operator licence, the applicants are also required to be medically fit to handle pesticides and a fit and proper person. Application and annual renewal fees are $44 each.

7.5 Western Australia

The Western Australia pest management industry is regulated through the Health Act 1911 and Health (Pesticides) Regulations 1956. The licensing body is the Pesticide Safety Section of the Health Department of Western Australia. This legislation covers both pest control operators and fumigators. It provides for licensing, storage, disposal, labelling of pesticides and containers, safety precautions, reporting of accidents and record keeping.

These regulations require that a person must be licensed to carry out pest control or fumigation work for reward. There are two classes of pesticides licences:

- Full pesticides licence; and
- Provisional pesticides licence.

A provisional licence requires the applicant to have completed an approved course (or in the process of completing a correspondence course), be medically fit to handle registered pesticides and at least 17 years of age. This licence is valid for one year and generally not renewable. A provisional licensee is only allowed to use registered

pesticides for reward under the supervision of a qualified pesticide operator. The application fee is $135.

A provisional licence is required before applying for a full pesticide licence. Furthermore, the applicant is required to be qualified in advanced pest control through an approved course, medically fit to handle registered pesticides and over the age of 18 years. The application and annual renewal fee for a full licence is $135.

To operate a pest control business for the purpose of reward requires registration as a 'commercial pesticide firm', which requires an application fee of $270. The annual renewal fee is $270.

The fumigation business is required to be registered, at a cost of $250 per annum. To be a registered firm, the owner is not required to be a licensed fumigator, however he or she must be 'properly equipped' and employ only licensed fumigators.

The application fee for fumigators is $290 and the annual renewal fee is $135. This licence is endorsed for one fumigant only; endorsements for other fumigants can be obtained at a cost of $135. To be eligible for a fumigator's licence, the applicant must be competent, have a thorough knowledge of the regulations, be medically fit and 18 years or older.

7.6 Tasmania

The Tasmanian pest management industry is regulated through the Agricultural and Veterinary Chemicals (Control of Use) Act 1995. The licensing body is the Registrar of Pesticides within the Department of Primary Industries, Water and Environment.

This legislation provides for the licensing, powers of inspectors, qualifications, storage and transport of pesticides, applicable pesticides, specification and maintenance of equipment, safety equipment and procedures, medical examinations, reporting of accidents and record keeping.

This Act specifies that persons must only use registered pesticides and chemicals, and use them in accordance with its label. A commercial operator's licence is required if performing pest control or fumigation for fee or reward. No licence is required if spraying on own premises; however, certificates of competency are required for a number of chemicals.

7.7 Northern Territory

The Northern Territory pest management industry is regulated through the Poisons and Dangerous Drugs Act 1996 and Poisons and Dangerous Regulations 1997. The licensing body is the Poisons Branch of the Territory Health Services. This legislation

covers licensing, powers of inspectors, storage and labelling of chemicals, competency and medical examinations.

The legislation provides authorisation for agricultural, horticultural or pastoral uses, and others as determined by the Chief Medical Officer. However, persons using pesticides for fee or reward must be licensed pest control operators. An application fee and annual renewal fee are applicable.

The legislation does not require that the applicants have formal qualifications. Applicants are, however, required to demonstrate knowledge of:

- Properties of the substances to be used;
- Proper procedures for safe storage, handling, application and disposal of the substances;
- Symptoms of poisoning and correct first aid procedures; and
- The provisions of the Act and Regulations.

7.8 Australian Capital Territory

The pest management industry is regulated through the Environmental Protection Act 1997, which is administered by Environment ACT.

Under this legislation, pest control and fumigation are 'the commercial use of chemical products registered under the Agricultural and Veterinary Chemicals Code Act 1994 of the Commonwealth', and as such are activities requiring environmental authorisation.

The Act specifies that the 'determined fee' must accompany the application for an environmental authorisation; however, there is no schedule outlining the fees.

Pest management businesses are required to employ only appropriately competent and trained operators. The requirement for authorisation applies to both pest control and fumigation, but only where these activities are conducted for fee or reward.

7.9 Summary

Each of Australia's States and Territories has existing legislation governing pest management technicians. With the exception of ACT, they are all very similar in that they require licensing and training, and they regulate certain safety procedures and equipment. Furthermore, this legislation is subject to NCP review.

The Australian Capital Territory has a system of 'environmental authorisation' rather than licensing. This legislation is relatively new and NCP issues were considered in its development.

Furthermore, National Competency Standards have been developed for the pest management industry and adopted by the National Environmental Health Forum. It is expected that national competency standards will be incorporated into the regulatory regime in each State and Territory by the end of this year. Pest management technicians will then need to meet these competency standards to satisfy various licence requirements, such as 'competence' and 'fit and proper'.

8 Public Consultations and Submissions

8.1 Introduction

A crucial component of the conduct of a Public Benefit Test (PBT) is the consultation with all parties that have an interest in the legislation under review. This is required so that the views of all stakeholders are taken into consideration when assessing whether or not any restrictive provisions contained within the legislation or alternative options provide a net public benefit.

Written submissions were called for during March 1999, which provided stakeholders and interested parties with the opportunity to have input into the review process.

Stakeholders were invited to comment on three options for regulatory reform:

Option 1 **Self Regulation**

No statutory regulation of pest management technicians. Under this option industry would self regulate through, for example, the development of a voluntary code of conduct.

Option 2 **Negative Licensing**

A 'negative licensing' approach which requires pest management technicians to take reasonable measures – such as compliance with a Code of Practice – to prevent adverse events that may impact on public health. This model could also specify that pest management activities may only be conducted by those who have obtained recognised competencies / qualifications. Failure to comply would be an offence. If found guilty of an offence, the person could be fined and / or prohibited from carrying on the activity.

Option 3 **Licensing Based on Industry Competency Standards**

Pest management technicians would still be required to be licensed but licensing criteria would be based on National Competency Standards for pest management. In addition, the present two licences for pest control and fumigation would be amalgamated into a single licence with different endorsements, with the period of the licence extended from 12 months to five years (at the licensee's discretion).

These options are discussed in greater detail in Chapter 9.

8.2 Stakeholders

The key stakeholders have been identified within the Public Benefit Test Plan as:

- Users of pest management services and the community;
- Pest control operators and fumigators;
- Manufacturers, wholesalers and retailers of pesticides and fumigants;
- Queensland Health; and
- Local Governments.

Users of pest management services include the household, commercial, industrial and government sectors. The current legislation protects these sectors from the potential health hazards associated with pesticide and fumigant use. The food and hospitality sectors are required to meet minimum hygiene standards and therefore place much emphasis on the effectiveness of pest management services.

Pest management technicians, as the subject of this legislation, are required to meet all obligations under the legislation. Furthermore, the current legislation protects this sector from the potential health hazards associated with pesticide and fumigant use.

The Public Health Services Division of Queensland Health undertakes the administration of pest management legislation in Queensland. The functions of the Environmental Health Unit within Queensland Health's Corporate Office in Brisbane are:

- Maintenance of the licensee database;
- Policy development;
- Assessment of applicants for licences;
- Issue of licences; and
- Investigation and enforcement.

The three Public Health Unit Networks (Southern, Central and Tropical) are spread across multiple offices within the catchment area of each Network. In respect of pest management, Environmental Health Officers located at each of the thirteen offices deal with:

- Assessment and applicants for licences; and

- Investigation and enforcement.

Local governments have an obligation under Part 8 and 17 of the Health Regulation 1996 to provide pest control services. They are both consumers and providers of pest management services as some employ their own pest management technicians while others outsource these services.

8.3 Stakeholder Input

Queensland Health conducted the consultation process and 6 written submissions were received from various groups of stakeholders, as detailed in the following sections.

8.3.1 Pest Management Technicians

One large pest management firm believes the industry has suffered from poor quality work practices by some operatives within the industry. For this reason it believes the industry, for the time being, requires regulation by a Government body for the interest of the community and the industry.

While self-regulation would be the ideal system, it would require the industry to have a single national industry association with compulsory membership. There is a belief that the pest management industry is a long way from this goal.

According to this submission, negative licensing would provide a good transition phase to self-regulation. Under this system the industry requires a Code of Practice, such as that under the peak industry body – the Australian Environmental Pest Managers Association (AEPMA) – to which not all operators belong. In addition, the Code of Practice should encompass the finer details expected under the legislation, therefore providing for compliance by all parties.

Licensing based on industry competency standards represents the best short to medium term option in this firm's opinion.

Concerns were raised about the restricted licence holders. This firm believes there is a need for further education to be undertaken in order for restricted licence holders to obtain an unrestricted licence. Restricted licence holders currently have no formal qualifications and this firm believes they are placing the welfare of the wider community at risk and the cause of the bad image within the industry.

8.3.2 Australian Environmental Pest Managers Association

The Australian Environmental Pest Managers Association (AEPMA) is the peak industry body for the Australian pest management industry. The objective of the AEPMA is

> *'…to promote and develop the environmental pest management service industry in Australia and coordinate its activities so that it may serve to the fullest extent the best interests of the industry and the Australian community.' (AEPMA 1999)*

To achieve its objective, the AEPMA:

- Provides forums, meetings and activities to encourage member relationships;
- Monitor regulations, standards and administrative procedures that affect the industry;
- Encourages participation and support of industry training programs;
- Develops relationships with other industry stakeholders;
- Encourages the adoption of safe work practices and environmentally responsible operations; and
- Maintains and enhances ethical and professional management practices.

Membership to the AEPMA is available to companies and businesses involved in any aspect of pest management, including suppliers of goods and services to the pest management industry.

In its submission AEPMA contend that the industry is not in a position to self-regulate due to a lack of personnel or infrastructure to protect consumers and promote ethical operations. The AEPMA believes that self-regulation leads to price cutting and the decline in reputable operators. For a code of conduct to be practical it requires support from manufacturers and a semi-government body.

The concept of negative licensing is only one step removed from self-regulation and the AEPMA believes it would add to the problems of regulatory or licensing authorities, increasing costs for what is seen as no practical or possible gain. Rather, the industry requires proactive training to reduce existing problems.

Licensing based on industry Competency Standards is supported by the AEPMA, with criteria being National Competency Standards agreed by all other states. The peak industry body believes that current exemptions relating to fumigation of stored grain and pest control and activities for agricultural purposes should continue to apply on the condition that activities are accountable and confined to the property of the accredited person and not undertaken for commercial gain.

The AEPMA did not identify any benefits associated with Option 1 or 2, but provided the following costs associated with Option 1 or 2, as supporting evidence for Option 3:

- Without training the standard would drop and the potential for 'disaster' would not diminish;
- Regulatory costs would increase through consumer complaints and the investigation of industry oriented accidents;
- Consumer dissatisfaction would increase, placing a load on government departments such as consumer affairs and health;
- An increase in costs to consumers through poor treatment practices;
- Increased workplace health and safety issues; and
- Increased chance of environmental harm.

The AEPMA identified the following benefits of Option 3:

- Industry standards will be maintained and may rise;
- Increased consumer satisfaction because of better industry practices;
- Lower safety concerns for both consumers and operators;
- Greater environmental protection;
- This option allows more time to be spent by manufacturers in training pest management technicians;
- The public perception of the industry will improve and thus increase the number of end users;
- The framework of Option 3 allows for traineeships;
- Employment opportunities will increase because of the increased demand and the traineeships; and
- Services in regional areas will be strengthened by better access to improved training.

8.3.3 Other Stakeholders

One stakeholder contended that the current legislation and system of licensing does not result in the licensing of competent persons because competence is currently judged by assessing knowledge rather than competence in application.

Other stakeholders do not support self regulation of the pest management industry on the basis that self regulation would reduce standards (to lower overheads / operating costs), thereby compromising public health. Furthermore, close regulation of the industry is necessary, as evidenced by the consumer complaint history.

A number of the other stakeholders believe the negative licensing option has merits; however, it requires careful consideration in terms of the management of records of the accreditation levels of operators. This option may also impact on the standard of equipment used by pest management technicians, especially if this equipment is not subject to inspection prior to commencement of operations. For this option to be effective, the supporting legislation must be capable of being enforced.

These other stakeholders believed that licensing based on industry competency standards offers a number of benefits in terms of minimising the risks to public health and providing a level playing field for pest management technicians. Again, any supporting legislation must be capable of being enforced for this option to be effective.

Submissions indicate that stakeholders support the amalgamation of the two licence categories and extending the licence period from one year to five years, at the licensee's discretion. One submission suggested that, under five-year licences, refresher courses could be required for persons not operating for more than twelve months.

8.4 Summary

The key stakeholders identified included pest management technicians, consumers and wider community, manufacturers, wholesalers and retailers of pesticides and fumigants, Queensland Health and local governments.

There was consensus amongst those who provided written submissions that a self-regulated industry is not appropriate. Stakeholders do not believe that the industry is mature enough to self regulate and Option 1 or Option 2, if implemented, would result in a lowering of standards (to reduce costs), thus compromising public health;

The third option – licensing based on National Competency Standards – was considered by all parties making written submissions to be the best option for both the community and the industry. Stakeholders believe that national competency standards would deliver benefits to the industry from increased standards, increased consumer satisfaction, lower safety concerns for the community and greater environmental protection.

9 Analysis of Regulatory Change Options

9.1 Introduction

This chapter presents the options for reform of the current regulatory state and the results of the public benefit test analyses. Each option is described and analysed in isolation first. The three options are then compared to the base case to arrive at the conclusions.

9.2 The 'With Change' State

The following three options for reform were considered:

Option 1 **Self Regulation**

No statutory regulation of pest management technicians. Under this option industry would self regulate through, for example, the development of a voluntary code of conduct.

Option 2 **Negative Licensing**

A 'negative licensing' approach which requires pest management technicians to take reasonable measures – such as compliance with a Code of Practice – to prevent adverse events that may impact on public health. This model could also specify that pest management activities may only be conducted by those who have obtained recognised competencies / qualifications. Failure to comply would be an offence. If found guilty of an offence, the person could be fined and / or prohibited from carrying on the activity.

Option 3 **Licensing Based on Industry Competency Standards**

Pest management technicians would still be required to be licensed but licensing criteria would be based on National Competency Standards for pest management. In addition, the present two licences for pest control and fumigation would be amalgamated into a single licence with different endorsements, with the period of the licence extended from 12 months to five years, at the licensee's discretion.

The impacts of moving to each of the above options from the 'without change' state are presented in the following matrices and discussed in the following sections. The magnitude of each impact is indicated in the brackets after the description of each impact. Where the impact has not been valued in dollars terms, the magnitude of the impact has been subjectively ranked as either as small (S), medium (M) or large (L).

9.2.1 Option 1 – Self Regulation

Option 1 provides for the self regulation of the pest management industry. Under this system there would be no statutory regulation of pest management technicians. The industry would develop a voluntary code of conduct, but membership to a peak industry body would not be compulsory. Pest management technicians would not be licensed, would not require formal qualifications or training and would not be required to comply with any safety or technical standards.

While it has already been stated that pest management technicians are required to invest in the relevant safety equipment to comply with other legislation, such as workplace health and safety, there is still scope for cost cutting and hence putting themselves, the community and environment at risk. Written submissions suggest that the industry already suffers a poor public image problem as a result of some 'rogue' elements in the industry.

The discussion in Chapter 5 highlighted the potential risks to public and environmental health resulting from the mismanagement of pesticides and fumigants. In the absence of legislation governing the actions of pest management technicians, it is probable that the occurrence of negligence, accidents and ineffective pest control and fumigation would increase.

Consumers incur a number of potentially significant negative impacts from moving from the current legislation to reform Option 1. These negative impacts include:

- Increased public and environmental health risks, stemming from increased chance of negligence, accidents and ineffective pest control;
- Increased costs of pursuing civil litigation; and
- Increased insurance costs.

Consumers may benefit from reduced prices for pest management services; however, this is expected to be a short term effect only. Some of the increased costs to pest management technicians, such as increased insurance costs, will have a lag before they are realised. In the long term, it is reasonable to assume that these costs will be passed on to the consumer. Hence the net impact to the consumer is likely to be a significant negative impact.

Under this deregulation option, pest management technicians would benefit from lower licence, training and other compliance costs. However, they face a number of significant costs:

- Increased health risks from greater risk of exposure to pesticides and fumigants;

- Reduced consumer confidence in the industry may result in lower demand, and hence sales;
- Increased insurance costs;
- Greater chance of civil litigation resulting from ineffective pest control; and
- The cost of developing and distributing a voluntary Code of Conduct.

The costs incurred by pest management technicians are far greater than the incremental benefits from reduced compliance costs. Hence, pest management technicians incur a net loss under this option.

The impacts on pesticide and fumigant manufacturers are likely to be minimal. There may be some increased sales in the short term, but these are likely to be eroded in the long term as consumer confidence in the pest management industry declines. Manufacturers may also be subject to increased litigation.

As the administrator of the legislation, Queensland Health would benefit under this option from reduced administration costs. However, as the main provider of clinical services, Queensland Health is likely to incur a significant negative impact due to the increased health risks to pest management technicians and consumers. An additional cost is the lack of knowledge regarding pesticides and fumigants being used in the pest management industry.

Under this option, Queensland Health is also likely to incur the significant cost of dealing with an increased number of public health incidents caused by misuse of pesticides and fumigants.

The above assessment of the impacts of moving to this reform option indicates that the sum of net impacts to all stakeholders will be negative and of considerable magnitude. While this option is the least restrictive on competition of the proposed reform options, it is clearly not capable of delivering the stated policy objectives.

Option 1 (Self Regulation) Impact Matrix				
Impact	Consumers	Technicians	Manufacturers	Health Agency
Negative Impacts	Increased public and environmental health risks. (L) Increased risk of harmful exposures through increased chance of negligence and accidents. (L) Effectiveness of pest management services likely to decrease because training is not compulsory. (M) Civil litigation more difficult and costly to pursue as there are no published standards of performance. (L) Increased cost of insurance to pest management technicians passed on to consumers. (L) Increased time investment required to locate competent pest management technician. (S)	Lack of consumer confidence leading to a reduced demand, and possibly reduced employment. (L) Increased health risks from greater exposure to chemicals. (L) Potential increased insurance costs due to increase in negligence and ineffective pest management. (L) Cost of developing, distributing and administering Code of Conduct. Cost of compliance with WH&S likely to increase due to potential increased chance of negligence and accidents leading to increases in workers compensation premiums. (M)	Lower consumer confidence may reduce sales. (L) Increased risk of litigation. (L)	Licensing revenue will be lost. ($157,000) Greater risk of related health problems leading to an increase in the provision of clinical services. (L) Major spillage incidents may increase, therefore requiring more cleanup and containment services from authorities. (L) Inability to prohibit use of certain pesticides and fumigants, and resulting lack of awareness of specific pesticide and fumigant use. (S)

Positive Impacts	Potentially slightly lower prices as compliance costs decrease (maybe only in short run). (S)	Possible cost saving as training not mandatory. (S) Marginal cost savings for licences. ($157,000) Entry into industry is easier. (M)	Short run increase in number of pest management technicians may lead to increased sales. (S)	Administration costs will decrease. (S) ($332,000) No role in policing or prosecution, therefore costs likely to decrease. (S)

9.2.2 Option 2 – Negative Licensing

Negative licensing is a system whereby pest management technicians would be required to take reasonable measures to prevent negative impacts on public health. A 'reasonable measure' could take the form of an industry Code of Practice, which would specify that pest management services could only be provided by qualified pest management technicians.

This option does not prevent incompetent technicians from entering the industry. However, anybody found to be contravening the Code of Practice could be fined or prohibited from carrying on pest management activities. This is a reactive approach, as an 'incident' needs to occur before any corrective action is taken. This is not a preferable option if incidents could reasonably have been avoided in the first place.

Only one step removed from self regulation, this option could meet the objectives of the current legislation under the assumption of full compliance to the industry Code of Practice by all pest management technicians. Submissions received suggest that the industry participants acknowledge that the industry as a whole is not mature enough to take up this option as there is still the opportunity for pest management technicians to operate outside the scope of the Code of Practice.

Consumers incur similar negative income impacts as for Option 1, but at a smaller magnitude. Furthermore, there would be a significant negative efficiency impact because consumers would have expectations of the quality of pest management services that are based on illusionary or implied, rather than actual, competencies.

Consumers may benefit from reduced prices for pest management services; however, this is expected to be a short term effect only. Some of the increased costs to pest management technicians, such as increased insurance costs, will have a lag before they are realised. In the long term, it is reasonable to assume that these costs will be passed on to the consumer. Hence the net impact to the consumer is likely to be negative, but not to the same extent as Option 1.

The benefits and costs to pest management technicians are similar to those under Option 1. While the estimated magnitude of the negative impacts are not as significant as those for Option 1, they are nevertheless significant and likely to exceed the estimated benefits.

The impacts on pesticide and fumigant manufacturers are likely to be positive, but minimal. There may be some increased sales in the short run, but these are likely to be eroded in the long term as consumer confidence in the pest management industry declines.

As the administrator of the legislation, Queensland Health would benefit under this option from reduced administration costs. However, as the main provider of clinical

services, Queensland Health is likely to incur a significant negative income impact due to the increased health risks to pest management technicians and consumers. An additional cost is the lack of knowledge regarding pesticides and fumigants being used in the pest management industry.

Under this option, Queensland Health is also likely to incur the significant cost of dealing with an increased number of public health incidents caused by misuse of pesticides and fumigants.

It is likely that the net impact to all stakeholder of moving to this reform option will be negative, but not of the same magnitude as the negative impact of Option 1. In summary, this option does not provide the protection to community, environmental and pest management technician health provided by the current regulations. On balance, it does not appear to achieve the objectives of the legislation or deliver a net public benefit to the community as a whole.

Option 2 (Negative Licensing) Impact Matrix				
Impact	Consumers	Technicians	Manufacturers	Health Agency
Negative Impacts	Increased public and environmental health risks. (M) Increased risk of harmful exposure through increased chance of negligence and accidents. (M) Effectiveness of pest management service is likely to decrease. (M) Civil litigation more difficult and costly to pursue. (M). Increased cost of insurance to pest management technicians passed on to consumers. (M) Increased time investment required to locate competent pest management technician. (S)	Lack of consumer confidence leading to reduced demand, and enhance employment may decline. (L) Increased health risks from greater exposure to pesticides and fumigants. (M) Potential increased insurance costs due to increase in negligence and ineffective pest management. (S) Increased costs of compliance with WH&S. (S)	Lower consumer confidence may reduce sales. (S) Increased risk of litigation. (S)	Licensing revenue will be lost. ($157,000) Potential increase in prosecutions due to the likely increase in health risks. (S) Greater risk of related health problems leading to an increase in the provision of clinical services. (M) Major spillage incidents may increase, therefore requiring more cleanup and containment services from authorities. (M) Inability to prohibit use of certain pesticides and fumigants, and resulting lack of awareness of specific pesticide and fumigant use. (S) Cost of developing, distributing and administering a Code of Practice

Positive Impacts	Potentially slightly lower prices as compliance costs decrease. (S)	Possible cost saving as training not mandatory. (S) Marginal cost savings for licences. ($157,000 licences) Employment may increase in short, as entry is easier. (S)	Short term increase in number of technicians may lead to increased sales. (S)	Decreased cost of administration. Reduced costs of policing. (S)

9.2.3 Option 3 – Licensing Based on Competency Standards

This option is similar to the current system, but with several improvements. Under this option, pest management technicians would still be licensed and Queensland Health would administer this licensing. The two licences – pest control and fumigator – would be merged into a single licence with endorsements and the period of the licence would be extended to five years. The new licence endorsements would be as follows:

- Pest Management (General);
- Pest Management (Fumigation);
- Pest Management (Timber Pests); and
- Pest Management (Restricted).

Existing unrestricted licence holders may be granted a licence under the new system after an assessment based on the principles of Recognition of Prior Learning, so these licensees may not be required to undergo additional training. However, all new applicants require qualifications based on the recently adopted National Competency Standards. Endorsements for pest control and fumigation would be based on the current training requirements, as outlined in Chapter 6. An endorsement for control of timber pests would be available upon completion of additional units (Units 8 & 10) from Certificate III.

Restricted licence holders are currently not required to have any formal training or qualifications. As a result, stakeholders have raised concerns about the competency levels of these licence holders. Under Option 3, current restricted licence holders would be required to obtain a Pest Management (General) licence within a specified time period, so that current restricted licences are phased out. This will require current restricted licence holders to obtain formal qualifications. Restricted licences will still be issued under certain circumstances for persons who do not have formal qualifications. For example, an Energex officer may be issued a restricted licence so that he or she can perform termite control on power poles.

The details for the delivery of these courses were not finalised at the time of writing this report. However, the cost of training is expected to increase, albeit only marginally. Furthermore, these courses are available through Open Learning and thus regional access will be assured.

Current restricted licence holders would incur negative income impacts due to incremental costs of training. Under Option 3, however, the competency of all licensed pest management technicians would be assured. Risks of negligence, accidents and ineffective pest management should be minimised, thereby:

- Minimising the risk to technician health;
- Minimising risk of litigation; and
- Minimising insurance costs.

Licence fees are not expected to significantly increase under this option.

Consumer confidence in the industry may increase, providing further benefits to pest management technicians through increased demand and employment opportunities. Overall, pest management technicians are expected to be net beneficiaries under Option 3.

Queensland Health is also a net beneficiary. There is a significant positive income impact from reductions in administration costs and time spent examining applicants. A further gain is realised from a reduced demand for reactive clinical services resulting from reduced negligence and accidents.

Incremental costs (primarily associated with training) will increase for those pest control operators who currently have restricted licences (and are not required to have completed formal training). Should this cost be passed on to consumers, it is likely to be negligible. Under this option all licensed pest management technicians would have some formal training, which has the following benefits to consumers:

- Health risks to public and environment would be minimised because negligence and accidents would be minimised;
- Quality of service is likely to increase;
- Increased consumer satisfaction because ineffective pest management would be minimised; and
- Costs of obtaining information and locating a competent technician are minimised.

The manufacturing industry may incur a positive income impact as the increased consumer confidence in the pest management industry leads to an increase in total sales of pesticides and fumigants.

Given that all stakeholders are expected to derive a net benefit under this option, it follows that the net benefit to all stakeholders of moving to Option 3 from the current state will be positive. Furthermore, this option meets the stated policy objectives.

Option 3 (Licensing with National Competency Standards) Impact Matrix				
Impact	Consumers	Technicians	Manufacturers	Health Agency
Negative Impacts	Negligible increase in price due to increased training costs for limited number of current technicians. (S)	Incremental cost of training for those who are currently not formally qualified. (S)	No negative impacts relative to Base Case.	No negative impacts relative to Base Case.
Positive Impacts	Effectiveness of pest management services is likely to increase due to higher standard of training. (M) Reduction in health and safety risk due to higher standard of training. (S) Better quality of service. (M) Increased consumer satisfaction because ineffective pest management minimised. (S) Reduced search costs as licensing based on competence. (S)	Consumer confidence should increase as service standards and effectiveness increase. (S) Employment should increase as consumer confidence in the industry increases. (M) Employment should increase through traineeships. (S) Health risks from exposure to pesticides and fumigants minimised. (S)	Increased consumer confidence may increase the total industry sales of pesticides and fumigants. (S)	Reduced cost of administration and examinations. Public health risks are further reduced. (S) Risk of major spillage incidents are further reduced. (S)

9.3 Conclusion

A summary of the impacts of each option relative to the base case is provided in the following table.

Although not valued, the most significant impacts under each of the reform options are those affecting public and environmental health as they directly relate to the policy objectives. Option 1 and Option 2 do not effectively prevent incompetent pest management technicians from entering the industry and result in an increased risk of negligent or improper use of pesticides/fumigants which in turn results in an increased risk of harm to the public and the environment from accidental exposure to pesticides/fumigants. In addition, the effectiveness of pest management activity is likely to decrease under both of these options. Option 1 and Option 2 therefore do not meet the policy objectives.

It is considered that the costs associated with the above impacts far outweigh the benefits to the pest management industry under Option 1 and Option 2 (eg. minimal costs savings, increased employment levels in the short term only) and therefore an overall net cost to the public is produced under both options.

Option 3 incorporates all of the key features of the licensing model under the base case but also provides for increased training standards which are likely to result in increased competency levels within the pest management industry. This will potentially reduce the risk of harm to the public and the environment from accidental exposure to pesticides/fumigants and increase the effectiveness of pest management activity, thereby achieving the policy objective to a greater extent than the base case. Increased consumer confidence in the industry is likely which will, when coupled with the increased training opportunities under this option, provide benefits to employment.

As well as these benefits, Option 3 also provides other benefits (eg. lower costs of locating information and competent technicians, reduced costs for regulatory and health agencies) while only resulting in a minimal increase in compliance costs to industry. Therefore, Option 3 produces a net benefit to the public.

Overall, Option 3 is considered to be the preferred reform option on the basis that:

- it achieves the policy objectives to a greater extent than the base case and produces a greater net public benefit than the base case
- Option 1 and Option 2 do not meet the policy objectives or produce a net public benefit.

Summary Impact Matrix					
Impact Area	Impact	Base Case	Option 1	Option 2	Option 3
Consumers Environmental Health	Effectiveness of pest control activity	Mostly effective.	Effectiveness is likely to decrease because training not compulsory.	As for option 1, but to a lesser extent.	Effectiveness is likely to increase due to higher standard of training.
	Harmful Exposures	Licensing minimises health and safety risks	Increased exposures through increased chance of negligence and accidents.	As for Option 1, but to a lesser extent.	Further reduction in health and safety risk due to higher standard of training.
	Redress	Can be pursued through criminal and civil action, as well as Workers Compensation.	Civil litigation more difficult and costly to pursue as there are no published standards of performance Workers Compensation would be as per the base case.	As for the Base Case for criminal litigation and Workers Compensation. Civil litigation not as easy to pursue, but easier than under Option 1.	As for the Base Case.
Cost of pest control activity	Price	Prices reflect compliance costs.	Potentially slightly lower prices as compliance costs decrease.	Potentially slightly lower prices but to a lesser extent than Option 1.	As for Base Case
	Consumer Choice	Licensing provides a mechanism to minimise search costs.	Increased choice of services but increased time required to locate competent PMT.	As for Option 1.	As for Base Case.
	Regional and Rural Impact	Services available in all rural and regional areas.	As for Base Case, but quality of service may decline.	As for Option 1.	As for Base Case, but quality may increase.
Technicians					

Summary Impact Matrix					
Impact Area	Impact	Base Case	Option 1	Option 2	Option 3
Training	Access to Training	Training available to all regions as it is delivered through distance education.	Opportunities to access training may decrease as demand falls.	As for Option 1.	As for Base Case.
	Cost of Training	Training is not mandatory for all PMTs, so this cost is not borne by all PMTs.	Possible cost savings as training not mandatory.	Marginal cost savings, but less savings than Option 1.	Incremental cost of training for those who are currently not formally qualified.
Market Impacts	Industry Characteristics	Licensing safeguards the industry against poor public perception.	Lack of consumer confidence leading to reduced demand.	As for Option 1, but not to the same extent	Consumer confidence should increase as service standards and effectiveness increase
Cost of Service Provision	Compliance (Health)	Must pay licence fees and other compliance costs. ($1.6 million)	No compliance costs.	As for Option 1.	As for Base Case.
	Compliance (Other)	Must comply with WH&S and Environmental Protection Legislation	As for Base Case.	As for Base Case.	As for Base Case.
	Health Risk Management	Provision of safety and operational procedures ensures PMT's safety. Licensing ensures PMTs are listed on Poisons Information Database.	Increased health risks from greater exposure to chemicals. Possibly no record of what chemicals are being used..	As for Option 1, but not to the same extent.	As for Base Case.
	Insurance	Licensing ensures insurance costs are minimised.	Potential increased costs due to increase in negligence and ineffective PCA.	As for Option 1.	As for Base Case.

Summary Impact Matrix					
Impact Area	Impact	Base Case	Option 1	Option 2	Option 3
Employment	Levels of Employment	2,513 licences in 1998.	May increase in short term, as entry is easier, but decline in long term as consumer confidence declines.	As for Option 1.	Should increase as consumer confidence in the industry increases. Increased employment through traineeships.
	Health Risks of Employees	Licensing minimises costs to employers of compliance with WH&S obligations by minimising the likelihood of WH&S breaches.	Costs of compliance with WH&S likely to increase due to potential increased chance of negligence and accidents leading to increases in the cost of workers compensation premiums.	As for Option 1, but to a lesser extent.	As for Base Case.
Manufacturers Market Impacts	Industry Characteristics	Market size reflects restricted entry into industry and consumer confidence.	Short term increase in number of PMTs may lead to increased sales. Lower consumer confidence may reduce sales.	As for Option 1.	Increased consumer confidence may increase the total industry sales.
	Legal Risk Management	Licensing minimises risks as manufacturers can rely on the licensing system as a basis for establishing the competency of users.	Increased risk of litigation.	As for Option 1.	Reduced risk of litigation due higher standard of training.
Health Agency					

Summary Impact Matrix					
Impact Area	Impact	Base Case	Option 1	Option 2	Option 3
Cost of Regulation	Licensing	Incur costs associated with administering legislation, but receive licensing revenue to offset costs. (net: $175,000)	Administration costs will decrease and licensing revenue will be lost.	As for Option 1.	Administration costs will decrease.
	Policing / Prosecution	Play an active role in policing compliance and prosecution.	No role in policing or prosecution, therefore costs likely to reduce.	A reactive role in prosecution, but no policing. Potential increase in prosecutions due to the likely increase in health risks.	As for Base Case.
Public Health	Investigation / Incident Management	Public health risks are minimised. Risk of major spillage incidents minimised.	Greater risk of related health problems leading to an increase in the provision of clinical services. Major spillage incidents may increase, therefore requiring more cleanup and containment services from authorities.	As for Option 1, but to a lesser extent.	As for Base Case, but risk may be reduced even further.
Source: KPMG 1999					

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Appendix A – Summary Tables of Health and Environmental Implications

This appendix contains two tables:

A1. Pesticide and Fumigant Health Impacts

This table lists the acute and chronic toxicity of commonly used pesticides and fumigants, as well as other significant effects. These other effects include reproductive, teratogenic, mutagenic and carcinogenic effects.

A2. Pesticide and Fumigant Environmental Impacts

This table details the toxicity of commonly used pesticides and fumigants on birds, aquatic organisms and other wildlife, as well as their persistence in soil, water and vegetation. Persistence is ranked as low (1 –2 weeks), moderate (up to three months) or high (more than three months).

Please note that this is not a comprehensive list of commonly used pesticides and fumigants. It is limited to those for which EXTONET Pesticide Information Profiles were available.

A1. Pesticide and Fumigant Health Impacts		
Compound	Toxic Effects	Other Effects
Pesticides		
Bacillus thuringiensis israelensis	No acute toxicity and no chronic toxicity.	May be teratogenic. No conclusive evidence or indication of other effects.
Bendiocarb	Moderate acute toxicity if ingested or absorbed through the skin. Can be fatal. May have chronic toxicity effects.	No conclusive evidence or indication of other effects.
Bifenthrin	Moderate acute toxicity if ingested. May cause paralysis. No information on chronic toxicity.	May have reproductive, mutagenic and carcinogenic effects.
Carbaryl	Moderate to very acute toxicity. Can be fatal. No information on chronic toxicity.	No conclusive evidence or indication of other effects.
Chlorpyrifos	Moderate acute toxicity, affecting the central nervous, cardiovascular and respiratory systems. Can be fatal. Chronic toxicity effects similar to acute toxicity and also impaired memory and concentration, and depression.	No conclusive evidence or indication of other effects.
Cyfluthrin	Moderate acute toxicity, but rapidly broken down in the human body. No chronic toxic effects.	May damage kidneys.
Cypermethrin	Moderate acute toxicity by dermal absorption or ingestion, affecting the central nervous system. Can be fatal. No information on chronic toxicity.	Possibly carcinogenic, and may affect some organs.
Deltamethrin	High acute toxicity. May result in death due to respiratory failure. Ingestion can result in coma or death. Some chronic toxicity effects.	May affect reproductive system. No information available on carcinogenic effects.
Diazinon	Moderate acute toxicity, can be fatal through dermal and oral exposure. Some chronic toxicity effects.	No conclusive evidence or indication of other effects.

A1. Pesticide and Fumigant Health Impacts (cont)		
Compound	Toxic Effect	Other Effects
Fenitrothion	Low acute toxicity. Some chronic	May have reproductive effects and is

	toxicity effects.	an immunotoxin.
Fenoxycarb	No acute or chronic toxicity.	No conclusive evidence or indication of other effects.
Fenthion	Moderate acute toxicity. Can be fatal. Some chronic toxicity effects.	No conclusive evidence or indication of other effects.
Hydramethylon	Slight acute toxicity. No chronic toxicity effects.	No conclusive evidence or indication of other effects.
Imidacloprid	Moderate acute toxicity. No chronic toxicity effects.	May be weakly mutagenic.
Lambda Cyhalothrin	High acute toxicity in some formulations. Chronic toxicity effects include weight loss and decreased food consumption.	No conclusive evidence or indication of other effects.
Methoprene	None to slight acute toxicity and no chronic toxicity effects.	No conclusive evidence or indication of other effects.
Permethrin	Slight to moderate acute toxicity, and no chronic toxicity effects.	No conclusive evidence or indication of other effects.
Propoxur	High acute toxicity. May be fatal. Chronic toxicity similar to acute toxicity effects.	No conclusive evidence or indication of other effects.
Pyrethrin	Low acute and chronic toxicity.	No conclusive evidence or indication of other effects.
Temephos	Moderate acute toxicity and no evidence of chronic toxic effects.	No conclusive evidence or indication of other effects.
Warfarin	Moderate to high acute toxicity. Some chronic effects. May be fatal.	Teratogenic effects and organ damage.
Fumigants		
Methyl bromide	High acute toxicity. Can be fatal. Some chronic effects.	Weakly mutagenic and may be carcinogenic.
Chloropicrin	High acute toxicity. Can be fatal. May have chronic toxicity effects.	No conclusive evidence or indication of other effects.
Source: Extonet 1999		

A2. Pesticide and Fumigant Environmental Impacts		
Compound	Toxicity	Persistence
Pesticides		
Bacillus thuringiensis israelensis	This compound is not toxic to birds, fish, bees and most other beneficial insects.	Nil to low persistence in soil, water or vegetation.
Bendiocarb	Moderately toxic to birds, moderately to highly toxic to fish, and toxic to bees and earthworms.	Nil to low persistence in soil, water or vegetation.
Bifenthrin	Moderately toxic to birds, highly toxic to aquatic organisms and toxic to bees.	Nil to low persistence in water or vegetation, and variable persistence in soil.
Carbaryl	Non-toxic to many wild bird species, moderately toxic to aquatic organisms and highly toxic to non-target insects.	Low persistence in soil and vegetation, and variable persistence in water.
Chlorpyrifos	Moderately to highly toxic to birds, aquatic organisms, bees and other wildlife.	Moderately persistent in soils and variable persistence in water and vegetation.
Cyfluthrin	Low toxicity to birds, but highly toxic to aquatic organisms, bees and other beneficial insects.	Low persistence in soil and water, variable persistence in vegetation.
Cypermethrin	Non-toxic to birds, but highly toxic to aquatic organisms and bees.	Moderate persistence in soils, high persistence in water and variable persistence in vegetation.
Deltamethrin	Low toxicity to birds, variable toxicity to aquatic species and toxic to bees.	Low persistence in soil, water and vegetation.
Diazinon	Highly toxic to birds, fish and bees.	Low persistence in soil and vegetation, and variable persistence in water.
Fenitrothion	Variable toxicity to birds, moderately toxic to fish and highly toxic to bees.	Low persistence in soil and vegetation, and variable persistence in water.
Fenoxycarb	Non-toxic to birds and bees, moderately to highly toxic to fish.	Low persistence in soil, water and vegetation.

A2. Pesticide and Fumigant Environmental Impacts (cont)		
Compound	Toxicity	Persistence
Fenthion	Highly toxic to birds and bees, moderately to highly toxic to aquatic	Moderate persistence in soil, water and vegetation.

	organisms.	
Hydramethylon	Non-toxic to birds and bees, highly toxic to fish.	Low persistence in soil, water and vegetation.
Imidacloprid	Toxic to birds, moderately toxic to aquatic organisms and highly toxic to bees.	Moderate to high persistence in soil and water.
Lambda Cyhalothrin	Low toxicity to birds and highly toxic to aquatic organisms and bees.	Moderate persistence in soil and water.
Methoprene	Low toxicity to birds, aquatic organisms and bees.	Low persistence in soil, water and vegetation.
Permethrin	Non-toxic to birds, highly toxic to fish, bees and other wildlife.	Low persistence in soil, water and vegetation.
Propoxur	Variable toxicity in birds, moderately toxic to aquatic organisms and highly toxic to bees.	Low to moderate persistence in soil and water.
Pyrethrin	Low toxicity to birds, highly toxic to aquatic organisms and bees.	Not available.
Temephos	Variable toxicity to birds and aquatic organisms, highly toxic to bees.	Low to moderate persistence in soil, water and vegetation.
Warfarin	Low toxicity to birds and aquatic organisms.	Not available.
Fumigants		
Methyl bromide	Not toxic to birds and bees, moderately toxic to aquatic organisms.	Moderate persistence in soil, low in water and variable in vegetation.
Chloropicrin	Toxic to fish. Toxicity to birds and other wildlife not available.	Low to moderate persistence in soil, water and vegetation.
Source: Extonet 1999		

Appendix B – Summary Tables of Legislation

This appendix contains two tables:

B1. Scope of Legislation by State and Territory

This tables lists the relevant legislation, the coverage of the legislation and administrative body in each State and Territory.

B2. Pest Management Licensing by State and Territory

This table lists the licence categories, relevant training requirements and applicable fees by each State and Territory.

B1. Scope of Legislation, by State and Territory			
State	Legislation	Scope	Administration Agency
Australian Capital Territory	Environment Protection Act 1997	Covers both pest control and fumigation for commercial purposes	Environment ACT
New South Wales	Occupational Health and Safety (Pest Control) Regulation 1998 (under OHS Act 1983) Pesticides Act 1978	Cover both pest control and fumigation, but not to pesticides for agricultural or pastoral purposes or to fumigation carries out for agricultural or horticultural purposes.	WorkCover
Northern Territory	Poisons and Dangerous Drugs Act 1996 Poisons and Dangerous Drugs Regulations 1997	Covers both pest control and fumigation for fee or reward.	Territory Health Services
Queensland	Health Act 1937 Health Regulation 1996	Covers both pest control and fumigation, but not for agricultural or horticultural purposes.	Queensland Health
South Australia	Controlled Substances Act 1988 Controlled Substances (Pesticide) 1988	Covers both pest control and fumigation for fee or reward.	Department of Human Services
Tasmania	Agricultural and Veterinary Chemicals (Control of Use) Act 1995	Covers both pest control and fumigation for fee or reward.	Department of Primary Industries and Fisheries
Victoria	Health Act 1958 Health (Pest Control Operators) Regulations 1992	Covers both pest control and fumigation for commercial purposes.	Department of Human Services
Western Australia	Health Act 1911 Health (Pesticides) Regulations 1956	Covers both pest control and fumigation for fee or reward.	WA Health Department

B2. Pest Management Licensing, by State and Territory				
State	Licence Classes	Training / Qualification	Application Fee	Renewal Fee
Australian Capital Territory	Environmental Authorisation	No specific requirements	na	na
New South Wales	Certificate of Registration (for business)	No specific requirements	$250	$250
	Pest Control Operator	Completed an approved course and had trainee licence for six months or two years practical experience and competent	$200	$200
	Trainee	Undertaking or completing an approved course	$25	na
	Fumigation Permit	No specific requirements	$35 annual or $100 triennial	$35 annual or $100 triennial
Northern Territory	Pest Control Operator	Knowledge of pesticides, safety procedures, symptoms of poisoning and provisions of the legislation	na	na
Queensland	Restricted Pest Control Operator	Pass licence examination	$65	$65
	Unrestricted Pest Control Operator	Completed approved course and pass licence examination	$65	$65
	Fumigator		$28	$28
South Australia	Pest Controller's Licence (for business)	Knowledge of requirements of legislation	$177	$177
	Pest Control Operator's Grade 3	Completed an approved course and two years practical experience	$44	$44
	Pest Control Operator's Grade 2	Completed an approved course and 12 months practical experience	$44	$44
	Pest Control Operator's Grade 1	Completed or in process of completing an approved course.	$44	$44

B2. Pest Management Licensing, by State and Territory (Cont)				
State	Licence Classes	Training / Qualification	Application Fee	Renewal Fee
Tasmania	Commercial Operator	na	na	Na
Victoria	Technical Manager (to register a business in own name) (may be endorsed for fumigation)	Held Technician's licence for at least twelve months and two years experience or equivalent qualification and pass test	$230	$115
	Technician (may be endorsed for fumigation)	Completed requirements of Trainee licence or completed other approved training and passed a test	$115	$115
	Trainee (may be endorsed for fumigation)	Be employed by a registered pest control business, pass preliminary test and intend to undertake an approved course	na	Na
Western Australia	Business Registration (Fumigation)	Properly equipped	$270	$250
	Fumigator	Competent and have a knowledge of regulations	$290	Renewal $135 Endorsement $135 (for extra fumigant on licence)
	Business Registration (Pest Control)	Competent and properly equipped	$270	$270
	Full Pesticides	Completed an approved course or demonstrated experience	$135	$135
	Provisional Pesticides	Completed or in process of completing an approved course	$135	May be extended for 12 months but not renewed
Na. Not Available				