

National Profile of Chemicals Management Infrastructure in Australia

**Environment Australia
November 1998**

EXECUTIVE SUMMARY

This National Profile has been prepared to assess Australia's national infrastructure for the management of chemicals. It has been based on information gathered from government, as well as from the industry, community groups and research bodies. Because it is the first such profile to be prepared, the main emphasis has been on explaining Australia's infrastructure from the national perspective, although some information on the role played by State and Territory governments has also been included.

The profile has addressed a number of key questions, as indicated below. One dominant theme to emerge from examining these issues is that Australia's chemical management infrastructure has undergone considerable change and innovation over the last decade. The changes reflect priorities identified by governments, particularly in relation to more consistent national approaches, avoidance of duplication and enhanced protection for workers, the public and the environment. Many of the key laws for administering chemicals have only been enacted within the past decade.

The key questions addressed by the National Profile are set out below.

What is the landscape affecting Australia's chemicals infrastructure?

As Chapter 1 explains, understanding the landscape from an environment, economic, political and social viewpoint is an important factor in considering Australia's chemicals management profile. Australia's ecologically unique mega-biodiversity, its strong resource based economy reliant on mineral exploitation and agriculture, its highly urbanised population hugging the eastern and south western coasts of an otherwise sparsely populated continent, and its multi-level system of government, all play a role in determining how chemicals management has developed in this country.

Australia's governance consists of three distinct tiers of government. The national (or Commonwealth) government is responsible for those areas referred to it by the Constitution or by agreement with State and Territory governments. The State and Territory governments manage all other aspects except those devolved to local government (which manages

many of the day to day decisions of government). This political landscape has had a major impact on how chemicals are managed in Australia with the Commonwealth currently responsible for the assessment of chemicals and the coordination of national chemicals management and the States and Territories managing the control of chemicals use.

The social and geographic landscape has also played a part in determining how Australia approaches its chemicals management with, for example, our relatively infertile soils encouraging fertiliser usage and livestock rearing (with its associated veterinary chemicals), a dry landscape in which water quality is of central importance, the population concentrated living in large cities creating urban pollution problems, concern that Australia should protect its unique mega-biodiversity, and a need to ensure our chemicals usage is managed soundly so that Australia's export markets are preserved.

What chemicals are manufactured, imported, exported and used in Australia ?

As Chapter 2 explains, the chemicals sector in Australia - through manufacture and exportation, importation and consumer use - makes a significant contribution to the domestic economy. Chemicals are used for a wide range of purposes in Australia. Notably, Australia is a major importer of fertilisers, a major user of pesticides and a significant export of inorganic chemicals or minerals. These patterns reflect the importance of Australia's minerals and agricultural sectors.

Australia's chemicals industry is primarily concerned with base chemical manufacturing and chemical reformulation. The industry, though small by global standards, is growing at three times the OECD average and represents an important part of Australia's economy.

However, as important as chemicals are, information on the use of chemicals (and their generation as emissions or waste) is currently fragmented in Australia. Data has proved hard to obtain and is often too aggregated to allow detailed examination. This is an area where cooperative effort and greater consistency of approach is beginning to occur, as discussed in Chapter 6.

What is Australia's regulatory environment?

The Australian regulatory environment for chemicals management, as explained in Chapter 4, is consistent with the political divisions noted above. Australia's chemicals management is generally divided between national (Commonwealth) uniform schemes of assessment or registration and regionally (State and Territory) based schemes focusing on managing the chemical at various stages of its lifecycle.

The other organising element in Australia's chemical management infrastructure is the management of a given chemical by its end-use. Thus, the approach taken is determined by whether the chemical is intended for use in industry, agriculture, pharmaceutical medicines or food. Together these approaches form a comprehensive chemicals management infrastructure.

As noted earlier, most of this regulatory environment now in place has been introduced to Australia since the late 1980s.

Assessment and registration of chemicals

Much effort has been directed in the past decade towards developing four key schemes that together manage the assessment and/or registration of chemicals. These four schemes correspond to the four common applications of chemicals (agriculture, industry, pharmaceuticals and food). In developing these schemes, Commonwealth, State and Territory governments agreed to use nationally uniform assessment programs, thus avoiding duplication, decreasing costs and reducing the burden on industry.

The four national schemes are: the National Registration Scheme for Agricultural and Veterinary Chemicals; the National Industrial Chemicals Notification and Assessment Scheme for industrial Chemicals; the Therapeutic Goods Administration for pharmaceuticals; and the Australia New Zealand Food Authority for food additives and contaminants.

Management of chemicals

The changes to Australia's chemical management infrastructure over the last decade include a large range of new State and Territory legislation directed at improving the management of chemicals. Fields covered include occupational health and safety (or ensuring the safe use of chemicals by workers), environment protection, transport and waste.

The level of activity and innovation in these areas equals that at the national level. Each State (New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania) and Territory (Northern Territory and Australian Capital Territory) has substantially overhauled its environmental protection, occupational health and safety, waste management and transport regimes in the past decade. This means that in each State and Territory there is a system of chemicals management designed to control a chemical through-out its lifecycle.

It is important to note that the National Profile, while concentrating on the national assessment schemes acknowledges the importance of lifecycle management of chemicals and suggests that future profiles investigate this area in more detail.

How is Australia's chemicals management infrastructure coordinated?

Because of the complexities imposed by the three levels of government, separate assessment regimes for different chemicals and the overall level of reform and change in chemicals management infrastructure, coordination among the various regulatory agencies has emerged as an important aspect in maintaining effective chemicals management in Australia.

As Chapter 5 explains, coordination is currently addressed through development of new agreements on chemicals management between the Commonwealth and State and Territory levels of government; consultation with the community (including industry) on chemicals infrastructure; and coordination and consultation within and between the various schemes of national chemical assessment.

The degree to which chemicals management infrastructure is coordinated to the satisfaction of all stakeholders remains an area of debate and review.

How does non-government activity influence chemicals management in Australia?

There exists a large body of non-government activity which has a major influence on chemicals management in Australia. Major groupings include industry organisations, community or environment organisations, and trade unions.

Environment organisations are well structured and strongly supported by the community in Australia. Some environment organisations concentrate almost solely on chemicals management issues. Consumer organisations are similarly well established and organised. Industry organisations are well organised and resourced. Industry organisations have sought to extend their management of chemicals beyond the factory gate. Australia also has a strong history of trade unions, who continue to address occupational, health and safety issues. This activity is expanded upon in Chapter 5.

All of these organisations have sought to interact closely with the regulatory environment and international developments. Non government organisations continue to provide impetus for change and innovation.

What is the international and technical infrastructure?

As discussed in Chapter 7, Australia's technical infrastructure supporting chemicals management is considered of world class standard. The National Association of Testing Authorities, the Commonwealth

Scientific and Industrial Research Organisation and the extensive range of Cooperative Research Centres maintain and expand this infrastructure. They are supported in this area by a range of technical associations.

Chapter 8 describes Australia's participation in international organisations and bodies directed at the management of chemicals including the OECD, Intergovernmental Forum on Chemical Safety and United Nations Environment Program. Australia is involved with a range of international agreements directed at the management of chemicals including the Basel, Prior Informed Consent and Chemicals Weapons Conventions. Australia has well established mechanisms for delivering coordinated positions at international meetings and supports its presence with regular contributions.

What conclusions can be drawn?

In the period since the 1992 Rio Earth Summit, Australia has implemented significant improvement in chemicals management.

One consequence of the innovation associated with these improvements is that coordination among the various regulatory agencies has emerged as an important aspect in maintaining effective chemicals management in Australia. All tiers of government in Australia have responded to this challenge but ongoing effort is required and it would be reasonable to conclude that developing a National Profile of Chemicals Management Infrastructure is itself an important part of improving cooperation across programme areas in Australia.

The national profile has also identified definite limits to access to information on chemicals use or emissions. However, it is important to recognise that recent developments, including introduction of the National Pollutant Inventory, show that this is a recognised problem, with reform and debate on data access and gathering an expanding area.

Indeed, a stop press (November 1998) for this profile has been the commitment, in the recent national election campaign of the political parties subsequently re-elected to Government, to a 'Chemwatch' which includes establishment of a database on agricultural and veterinary chemical use.

ACKNOWLEDGEMENTS

This National Profile on Australia's chemical management infrastructure has been developed by Environment Australia with the assistance of representatives from other Commonwealth departments, State and Territory governments, industry bodies and public interest groups (a full list of contributors is provided at Appendix 5). In particular many of these groups were represented on a National Coordinating Team, which provided advice and direction to the National Profile. Some material was also provided through a consultancy with UNISEARCH, University of New South Wales.

Environment Australia is grateful to all those who have contributed advice and information for the development of this profile.

We have endeavoured to ensure that the factual material that has been incorporated is accurate but would invite comment on any errors or inaccuracies (a response sheet is provided at the end of the profile).

INTRODUCTION

Chemicals are a vital part of our daily life. They provide society with a wide range of benefits, particularly increased agricultural and industrial productivity and improvements in the control of disease. On the other hand, it cannot be forgotten that they have the potential to cause considerable health and environmental problems throughout their life cycle, from production through to disposal.

The United Nations Conference on Environment and Development in Rio De Janiro 1992 devoted considerable attention to the issue of chemicals management. This was recognised in Chapter 19 of Agenda 21, which laid out a series of objectives designed to help countries work together to improve and strengthen their management of chemicals to contribute to improved human and environmental health.

As a key first step in this process, each country has been encouraged to prepare a national profile of its chemicals management infrastructure. Such a profile is intended to provide a baseline document setting out the legal, institutional, administrative and technical infrastructure for chemicals management within each country. This is intended to provide governments, institutions, business, professional organisations and the public in general with a comprehensive description of the way in which chemicals are managed. The profile can then become a reference point against which future activity can be measured. In addition, the actual process of preparing the profile is intended to encourage greater communication and cooperation between the range of stakeholders concerned with issues relating to chemicals.

The United Nations Institute for Training and Research (UNITAR) developed a document to assist countries in the preparation of profiles. Countries have been encouraged to use this document as guidance but to shape their national profiles to suit their own political, economic and social needs and conditions. Whilst following the guidance in general, this National Profile does vary from the suggested UNITAR guidelines and a comparison is provided at Appendix 6.

As noted under acknowledgments, this National Profile was developed with the assistance of many contributors. As suggested in the UNITAR guidelines, a National Coordinating Team (NCT) was formed to oversee

the development of profile. Members of the NCT met three times and were heavily involved in both drafting and reviewing the text. Several jurisdictions and organisations, not formally part of the NCT, also provided useful comment, advice and material. The members of the NCT are listed in Appendix 5.

For the purposes of this national profile, chemicals have been deemed to include elemental or compound substances or mixtures of substances which are active constituents of, or used in the manufacture of, products. The chemicals or products can be used in a number of applications broadly divided into industrial (for example, the benzene in petrol), agricultural and veterinary (glyphosate or round-up), pharmaceutical (aspirin), and lastly food additives and contaminants.

A number of areas concerned with chemicals management in Australia have been documented including data on production and trade, relevant legislation, national regulatory structures, government coordination and consultation mechanisms, access to information, the role of non-government organisations, technical infrastructure, and international linkages.

Some areas have not been dealt with extensively in this first attempt to prepare an Australian National Profile. The focus has been on the national schemes and activities directed towards the chemicals management of agricultural, veterinary and industrial chemicals. This is because the first step in the management of chemicals is established through a robust, open and scientific assessment process to establish the benefits and risks posed by a chemical. The process of chemicals management and risk reduction builds on the knowledge gained through assessment. Thus the emphasis in this first profile has been on the Australian regulatory programs to assess chemicals.

This approach has meant that the detail on State, Territory and Local government management activity is necessarily limited, though it is important to note that State and Territory chemicals management infrastructure is comprehensive. In addition, the management systems for chemicals for use in pharmaceuticals or as food additives are less fully documented than those for agricultural, veterinary and industrial chemicals. Later versions of this profile could cover a broader field or focus on differing aspects.

We support the UNITAR view that the profile should be a living document and it is envisaged that this first version will be reviewed regularly and updated in the light of change and new policy emphases.

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ABBREVIATIONS

AAC	Australian Agricultural Council
AAVCC	Australian Agricultural and Veterinary Chemicals Council (largely subsumed by the NRA)
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACIC	Australian Chemical Industry Council (now PACIA)
ACS	Australian Customs Service
ACT	Australian Capital Territory
ACTDG	Australian Code for the Transport of Dangerous Goods by Road and Rail (the ADG Code)
ACTU	Australian Council of Trade Unions
ADEC	Australian Drug Evaluation Committee
ADIs	Acceptable Daily Intakes
ADRAC	Adverse Drugs Reactions Advisory Committee
AEC	Australian Environment Council
AGPS	Australian Government Printing Services
AICS	Australian Inventory of Chemical Substances (NICNAS)
ANZEC	Australian and New Zealand Environment Council
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZFA	Australia New Zealand Food Authority
ANZSIC	Australia and New Zealand Standard Industry Classification
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AQIS	Australian Quarantine and Inspection Service
AS	Australian Standard
ASIC	Australia Standard Industry Classification
ASTC	Australian Science and Technology Council
ATSIC	Aboriginal and Torres Strait Islander Commission

Avcare	National Association for Crop Protection and Animal Health (previously AVCA)
AWRC	Australian Water Resources Council
BAT	Best Available Technology
BMP	Best Management Practice
CAS	Chemical Abstracts Service
CEPA	Commonwealth Environment Protection Agency (now Environment Australia)
CFCs	Chlorofluorocarbons
CPI	Consumer Price Indicator
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTN	Clinical Trials Notification
CTX	Clinical Trials Scheme
DDEWRSB	Department of Employment, Workplace Relations and Small Business formerly known as Department of Workplace Relations and Small Business
DEH	Department of Environment and Heritage (Commonwealth) formerly known as Department of the Environment
DEET	Department of Employment, Education, Training and Youth Affairs (Commonwealth)
DFAT	Department of Foreign Affairs and Trade (Commonwealth)
DHAC	Department of Health and Aged Care formerly known as Department of Health and Family Services (Commonwealth)
DISR	Department of Industry, Science and Resources formerly known as Department of Industry, Science and Tourism (Commonwealth)
DAFF	Department of Agriculture, Fisheries and Forestry formerly known as Department of Primary Industries and Energy (Commonwealth)
EC	European Community
EDO	Environmental Defender's Office
EEC	European Economic Commission
EPA	Environment Protection Agency (State/Territory)
EPRP	Existing Pesticide Review Program (of the NRA)
FAO	Food and Agricultural Organisation of the United Nations
GDP	Gross Domestic Product
GRAS	Generally Regarded as Safe

IARC	International Agency for Research on Cancer (WHO)
IC	Industry Commission (Commonwealth)
IGAE	Intergovernmental Agreement on the Environment
IFCS	International Forum for Chemicals Safety
ILO	International Labour Organisation
IPCS	International Program on Chemical Safety
IRPTC	International Register of Potentially Toxic Chemicals
ISO	International Standards Organisation
JECFA	Joint Expert Committee on Food Additives (FAO/WHO)
MPC	Maximum Permitted Concentration
MRL	Maximum Residue Limit
MSDS	Material Safety Data Sheets
NATA	National Association of Testing Authorities, Australia
NDPSC	National Drugs and Poisons Scheduling Committee (DHFS)
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NFA	National Food Authority (now ANZFA)
NHMRC	National Health and Medical Research Council
NICNAS	National Industrial Chemicals Notification and Assessment Scheme (Commonwealth)
NOHSC	National Occupational Health and Safety Commission (formerly known as Worksafe Australia, Commonwealth)
NPI	National Pollutant Inventory
NRA	National Registration Authority for Agricultural and Veterinary Chemicals
NSW	New South Wales
NT	Northern Territory
OH&S	Occupational Health and Safety
OECD	Organisation for Economic Cooperation and Development
PACC	Pesticides and Agricultural Chemicals Committee (DHFS)
PACIA	Plastics and Chemicals Industry Association
PCBs	Polychlorinated biphenyls
PIAC	Public Interest Advocacy Centre
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
Qld	Queensland

SA	South Australia
SCARM	Standing Committee on Agriculture and Resource Management
SoE	State of the Environment
SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons
TAFE	Technical and Further Education
Tas	Tasmania
TGA	Therapeutic Goods Administration
UN	United Nations
UNCEDG	United Nations Committee of Experts for the Transport of Dangerous Goods
UNEP	United Nations Environment Program
US EPA	Environmental Protection Agency (USA)
Vic	Victoria
VOCs	Volatile Organic Chemicals
WA	Western Australia
WHO	World Health Organisation

Chapter

1

NATIONAL BACKGROUND INFORMATION

This Chapter provides general background information about Australia to enable our approaches to chemicals management to be considered in the broader context. Political, physical, social and economic aspects are reviewed briefly.

A range of sources were used in providing this background and these are detailed in the *References and Bibliography* at the end of the profile.

1.1 Introduction to Australia

Australia is introduced by a description of its landscape and population, and its political and socio-economic structure.

1.1.1 The landscape

Figure 1–1: The Australian continent



Australia is an island country, occupying an entire continent in the Southern Hemisphere between the Pacific and Indian Oceans. Because of its location, isolation and natural history, Australia’s biodiversity is rich and distinctive, with much of the flora and fauna unique to Australia.

Australia’s landmass is about 7.6 million square kilometres, making the continent roughly twenty times larger than Japan and almost as large as the USA (excluding Alaska). The climate is tropical in the north, Mediterranean in the south and west and temperate in the south-east.

Although nearly one-third of Australia lies in the tropics, over eighty per cent of the continent is classified as arid, with drought as a recurring feature. This low rainfall level, coupled with relatively poor soils across much of the land, has played and continues to play an important role in determining Australia’s patterns of agriculture and settlement.

1.1.2 The population

Archaeological findings indicate that the aboriginal peoples populated Australia for at least 40,000 years before European settlers arrived in the late 18th century.

Within seventy years of European settlement, a census showed that the population had risen to around one million. Population growth continued steadily, receiving a significant boost after World War II as a result of an active migration program. The present day population is around 18 million and growing at about 1.4 percent a year, mostly through natural increase but partly through continuing immigration.

Migration has changed the demographic structure of Australian society considerably and four out of ten Australians are either migrants or the first-generation children of migrants. The indigenous population represents 1.6 per cent of the total population.

The Australian people live mainly along the coast with more than 80 per cent of the entire population occupying just one per cent of the land surface. Most Australians live in the major cities with the largest two, Sydney and Melbourne, accounting for over six million people (around one-third of the total). This high level of urbanisation places many environmental and other pressures on a relatively small area of the total land mass.

1.2 The political structure

Australia is both a federation and a constitutional monarchy, with its Head of State being Queen Elizabeth II. The democratic and parliamentary principles, which are basic to the British system of government, also underlie Australia's Constitution and system of national government.

Australia was a collection of six self-governing British colonies until 1901 when, under the Australian Constitution, the colonies became the six States of the Commonwealth of Australia. Many of the Commonwealth Government's legislative powers are listed in Sections 51 and 52 of the Constitution and include taxation, defence, external affairs, interstate and international trade, foreign, trading and financial corporations, marriage and divorce, immigration, bankruptcy, and interstate industrial arbitration. Other areas not specifically referred to the Commonwealth by the Constitution, for example chemicals management, the environment and occupational health and safety, remain the responsibility of individual States and Territories. The Commonwealth, State and Territory governments often cooperate and collaborate on a range of issues, agreeing power sharing arrangements and, within the area of chemicals management, this could be seen as an underlying theme.

Australia is governed by three levels of government: Commonwealth, State or Territory, and local. The **national (Commonwealth) parliament** is composed of an upper house (Senate) and a lower house (House of Representatives). The political party or coalition commanding a majority in the House of Representatives following a federal election forms the Commonwealth government, with the leader of that party or coalition, by convention, becoming the Prime Minister. A Cabinet of Senior Ministers is the major policy making body.

The **second level of government comprises six States** (New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania) **and three self-governing Territories** (the Northern Territory, the Australian Capital Territory and the Territory of Norfolk Island).

Each State has a separate and independent parliament and each self-governing Territory has a legislative assembly established under the laws of the Commonwealth Parliament. Under the constitutions of each State, its Parliament can make laws on any subject of relevance to that particular State, Appendix 1 outlines, for example, the many chemicals management statutes of the States and Territories. However, within the subject matters conferred on it by the Constitution, the Commonwealth retains the power to override State laws.

The **third level of government is comprised of more than 900 local government bodies** in cities, municipalities and shires. Local government bodies vary considerably in size, population, income, range and complexity of functions. Many day to day decisions of government are made at this level.

In the area of chemicals management, the Commonwealth government has responsibility for signing and ratification of treaties (in consultation with the States and Territories), import and export and coordination of government activities at all levels. The Commonwealth also acts to notify and assess industrial chemicals and register agricultural and veterinary chemicals but DEHs this with the formal agreement of State and Territory governments and relies on supporting State and Territory legislation. State and Territory governments have extensive responsibilities for chemicals management, particularly in relation to occupational health and safety, transport, storage, and use and disposal of chemicals. Local governments are important in overseeing local activity in relation to siting of repositories, disposal of waste and so on.

1.2.1 The judiciary

The High court is the apex of the Australian judicial system, with the power to interpret the Constitution of Australia. The High Court is the final court of appeal within Australia in all other types of cases, even those dealing with purely State matters. Each State and Territory also has its own independent judiciary.

1.3 The economy

Over the past ten to fifteen years, Australia has undergone major economic restructuring and opened its economy to increased competition, both internally and externally. Major reforms have taken place including floating the Australian dollar, deregulating the financial sector and reducing tariffs. These reforms have been accompanied by microeconomic restructuring in such areas as taxation, transport and public utilities. A number of major government businesses have been or are being transferred to the private sector.

Overall, despite a build-up of overseas debt, the Australian economy has experienced strong growth since the beginning of the 1980s. The economic sectors of most interest to chemicals management are agriculture, mining and manufacturing.

Agricultural production contributes 25 per cent of Australia's total export earnings with the main products being beef, wool, winter cereals, sugar and rice. The principal non-food crop is cotton. Because the soils are generally poor, nutrient deficiencies are common and fertilisers, particularly phosphate, are widely employed. Use of nitrogenous fertilisers in Australia has grown at a faster rate than both agricultural production and GDP.

Mining plays a major role in the Australian economy. About 80 per cent of production is exported, with more than A\$30 billion being generated in 1997. The Australian continent is mineral rich and has the world's largest demonstrated reserves of diamonds, lead, mineral sands, uranium, silver and zinc. Australia is among the top six countries for reserves of bauxite, black and brown coal, cobalt, copper, gold, iron, nickel, and manganese. Non-ferrous metals transformation is growing by over three times the OECD average.

According to the Australian Bureau of Statistics (ABS) figures, in 1996 manufacturing accounted for 15 per cent of GDP and employed about 15 per cent of the Australian work force.

The Australia chemicals industry is important to the economy with the chemicals market (including basic industrial chemicals, imports, textiles, plastics products, rubber products and other chemicals products) accounting for over A\$32,670 million turnover in 1995/96 and employing over 80,000 people. The chemicals industry has also been growing by over three times the OECD average (ABS, 1996).

1.4 The social context

English is the national language of Australia. Prior to European settlement, however, the Aboriginal peoples of Australia and the Torres Strait Islands spoke many languages and dialects. Many of these are still

in use in Australia. Australia's cultural vitality is, in part, a product of the variety of languages spoken in the community. It is estimated that about 2.4 million speak another language at home, the most common being Italian, Greek, Chinese, Arabic/Lebanese and Vietnamese.

Australia has a nationally supported health-care system which provides universal access to hospital care and subsidised medical and pharmaceutical services. On average, the population's health is good with a very low infant mortality, being about 8.4 per 1000 live births in 1990. At present, Australian males can expect to live to 75 years of age and females to 81 years. However, Australia's Aboriginal and Torres Strait Islanders (or indigenous) population has higher infant mortality, with 22.5 infant deaths per 1000 live births, a greater incidence of preventable disease and a lower life expectancy than other Australians.

There is universal access to free education in Australia, with three million young Australians attending school. Nearly all Australians are literate, although literacy rates are lower among Aborigines. The retention rate for the last years of secondary education is high and many Australian students go on to tertiary studies. There are 42 institutes of higher education in Australia.

The Australian workforce stands at around eight million, of whom about eight per cent are seeking work but are currently unemployed. Employment is mostly in manufacturing, wholesale or retail trade and service industries. About 40 per cent of the work force is female. The manufacturing sector employs about 15 percent of the work force, and another nine per cent are employed in agriculture, energy and minerals.

The Australian community has a strong interest in environmental issues, consistently placing a high priority on clean air and clean water. Nearly half a million Australians participate in conservation groups and considerable activity takes place at the grass-roots level. Local governments build environmental and public health issues into their approvals and management processes.

1.5 Comment

Strong interest in environmental matters and the push towards microeconomic reform activities have resulted in a trend towards co-regulation, best practice, responsible care and community education in relation to chemicals management in Australia.

Chapter

2

CHEMICAL PRODUCTION, IMPORT, EXPORT AND USE

This Chapter provides information on production, trade, consumer chemicals, petroleum products and use of chemicals. Waste management is also discussed. Although this Chapter is based on a variety of sources, information has been difficult to obtain and only limited information is available.

2.1 Introduction

The chemicals sector in Australia—through manufacture and exportation, importation and consumer use—makes a significant contribution to the domestic economy. Chemicals in Australia are used for a wide range of purposes, from those bought over the counter for personal care, to medical uses and cleaning, through to agricultural and industrial chemicals.

Estimates as to the size of Australia's chemical industry vary according to what is included in the estimate. Using Australian Bureau of Statistics (ABS) information it is estimated that the chemicals industry had a turnover in excess of \$A35 billion in 1995-96 and employed over 80,000 people (ABS, 1996). A more recent report by consultants Access Economics (1997) concluded that the manufacture of chemicals had a turnover of \$A16.6 billion in 1994-95 and employed 62,700 people, (6.8 per cent of the manufacturing total). Access's figures include fertilisers, other basic chemicals, paints, pesticides, soap and detergents, other chemical products and plastic products, but do not account for significant industries such as pharmaceuticals, cosmetic and rubber products, nor the import and export of products. Regardless of which figure is used, Australia's chemical industry, though small as a proportion of the global chemicals industry, is significant both as an employer and a contributor to Australia's economy.

2.2 Production

Table 2-1 sets out official production statistics for the chemicals industry during 1993-94. The data show that chemicals produced in Australia for industrial use is the most important class.

Fertilisers also comprise an important class, with production of nitrogenous and phosphatic fertilisers at more than 1.1 Mt and 1.4 Mt respectively. In the pesticides class, herbicides comprise the largest segment in terms of both production and value of sales. Insecticides are important in terms of value of sales.

Data identifying the quantities of chemicals re-formulated or re-packaged in Australia is not available but is accounted for within the total production figures of Table 2-1.

Information was unavailable on the actual quantity of pharmaceutical products produced in Australia. In terms of value, however, they were the most important element within the consumer chemicals class and the chemicals industry overall, with sales over A\$3.1 billion in 1993-94.

Table 2–1: Production by the chemicals industry in Australia, 1993–94¹

Chemical Type		Production (1993-94) ²		
		Unit ³	Quantity	Value(A\$m)
Pesticides	Disinfectants	t	12,706	31.0
	Fungicides	t	2,736	NA
	Herbicides	t	124,687	295.4
	Insecticides	t	16,990	202.0
Fertilisers	Acids Ammonium and compounds	t	287,000	32.8
	Ammonia	t	539,000	47.3
	Animal or vegetable fertilisers	t	99,454	48.0
	Nitrogenous fertilisers	t	1,116,000	335.3
	Phosphatic fertilisers	t	1,429,000	304.6
	Others		NA	218.2
Industrial Uses	Basic inorganic	t	2,585,000	953.5
	Basic organic	ML	8,453	832.8
	Man-made fibres		NA	6.9
	Miscellaneous basic chemical products		NA	144.6
	Plastics in primary forms	t	885,000	1,230.4
	Synthetic rubber in primary forms	t	49,000	80.1
	Tanning or dyeing extracts and derivatives	t	39,971	177.3
Other Chemicals	Paints varnishes, artist's colour, ink etc. (liquid)	ML	192	NA
	Paints varnishes, artist's colour, ink etc. (other)	t	40,645	⁴ 2,136.7
	Other chemical products	t	97,546	1,530
Consumer Chemicals	Cleaning + toilet preparations (liquid)	ML	84.2	NA
	Cleaning + toilet preparations (other)	t	375,968	⁴ 1,866.7
	Pharmaceutical products		NA	3,163.7

1) All data are taken from: *Manufacturing Production, Australia: Principal Commodities Produced, 1993-94*. ABS Cat. No. 8365.0; 2) Commodities are classified according to the Australian and New Zealand Standard Commodity Classification (ANZSCC); 3) t = tonnes and ML = megalitres; 4) Combined value for liquid and other, NA = Not Available

2.2.1 Minerals

Table 2–1 shows that basic inorganic chemicals and minerals comprise the largest element of chemicals for industrial uses, with over 2.5 Mt produced. This is a result of the size of the minerals industry in Australia—minerals extraction and processing account for a large part of Australia's economy.

2.3 Trade (import and export)

Trade data published by the Australian Bureau of Statistics, extracted in Table 2–2, indicate that Australia is predominantly a net *importer* of chemicals, importing \$A7,400.1 m and exporting \$A2,363.6 m worth of chemicals per annum, not counting inorganic exports or imports.

For pesticides the difference is smaller, with imports of \$A177.3 m and exports of \$A103.7 m per annum. However, Australia is a major importer of all fertilisers listed, particularly ammonium and nitrogenous compounds. Australia is also a major importer of chemicals listed under

industrial uses in Table 2–1. The largest import is organic chemicals, both in terms of quantity and value (\$A2,118.8 m).

Inorganic chemicals reverse this pattern, with exports of \$A2,858 m and imports of \$A709.4 m per annum. Section 2.2.1 discusses the impact of Australia’s minerals industry which accounts for this difference.

Table 2–2: Trade Statistics for Australian chemicals industry¹, 1996–97

Chemical Type	Export (1996-97)			Import (1996-97)		
	Quantity	Unit ²	Value ³ (A\$ m)	Quantity (t)	Unit	Value ⁴ (A\$ m)
Pesticides:						
Disinfectants	1,542	t	3.7	6,637	t	104.2
Fungicides	710	t	6.7	NA		1.1
Herbicides	8,779	t	57	6,069	t	29.4
Insecticides	3,401	t	30.9	3,202	t	36.6
Rodenticides	NA		12.4	1,759	t	7
Fertilisers:						
Ammonium & nitrogenous com.	33,449	t	15.9	1,119,294	t	275.1
Animal or vegetable fertilisers	1,625	t	1.6	2,078	t	1.4
Phosphatic fertilisers	26,908	t	2.9	363,526	t	79.5
Others	4,231	t	5.2	367,952	t	353.4
Industrial Uses:						
Inorganic chemicals	2.5	ML		0.002	ML	
	11,140,706	t	⁴ 2858	18,81,764	t	⁵ 709.4
Organic chemicals	0.1	ML		67.9	ML	
	92,198	t	⁴ 206.3	441,155	t	⁵ 2118.8
Miscellaneous products	0.7	ML		0.67	ML	
	2,001	t	⁴ 67.7	38,123	t	⁵ 139.7
Plastics in primary forms	173,148	t	291.3	430,291	t	854
Rubber in primary forms	7,105	t	9.4	72,037	t	133.7
Tanning or dyeing extracts	2,246	t	16.2	19,608	t	77.3
Other Chemicals:						
Adhesives	13,438	t	31.3	6,187	t	34.8
Colouring materials	137,259	t	290.8	23,291	t	130.3
Paints etc. (liquid)	10.6	ML		10.3	ML	
Paints etc. (other)	9,752	t	⁴ 104.7	17,771	t	⁵ 202.8
Other chemical products	1.4	ML		3.9	ML	
	13,740	t	⁴ 154.6	160,705	t	⁵ 562.1
Consumer Chemicals:						
Cleaning plus toilet(liquid)	11.3	ML		7	ML	
Cleaning plus toilet (other)	37,797	t	⁴ 285.6	119,560	t	⁵ 669.9
Essential oils	787	t	24.1	1,835	t	42.1
Pharmaceutical	8,463	t	745.3	NA	t	1539.9

1) Commodities are classified according to Australian Customs Tariff Nomenclature and Statistical Classification. All data taken from: *Import and Export Data*, ABS@ABS-GOV-AU:Impchem.csv;
 2) t = tonnes and ML = megalitres; 3) Customs value; 4) FOB Value 5) Combined value for liquid and other, NA = not available.

2.4 Petroleum products

Information about petroleum production is gathered separately from other chemicals information and is presented here as a separate section. Data obtained from the Australian Bureau of Agricultural and Resource Economics (ABARE) show Australia to be a net exporter of refined petroleum products.

Australia is a net importer of crude oil and other refinery feedstock. In 1996-97, Australia produced 47,767 ML of refined petroleum products, and consumed 47,851 ML, as shown in Tables 2-3 and 2-4.

Table 2-3: Australian trade in the petroleum industry, 1996-97

Type	Exports		Imports	
	Volume (ML)	Value (A\$m)	Volume (ML)	Value (A\$m)
Automotive gasoline	1,274	260	1,074	225
Automotive diesel oil	1,306	295	927	201
Aviation turbine fuel	699	165	306	66
Fuel oil	928	128	809	104
Industrial and marine diesel fuel	68	21	25	7
Aviation gasoline	70	20	-	-
Kerosene	31	8	-	-
Lubricants	363	181	20	52
Other products	301	68	544	213
Total refined products	5,040	1,147	3,705	868
Liquefied petroleum gas (LPG) ²	2,421	356	588	87
Bunkers ³	2,294	547	-	-
Crude oil and other refinery feedstock	12,408	2,120	24,770	4,234
Liquefied natural gas ⁴	7,486	1,537	-	-

1) Source: ABARE: *Australian Commodity Statistics, 1997*; 2) Mostly naturally occurring.

3) Ships and aircraft stores; 4) 1 tonne of LNG is approximately equal to 2174 litres of LNG

Table 2-4: Australian production and consumption of refined petroleum products¹, 1996-97

Product	Production (ML)	Consumption (ML)
Automotive gasoline	18,084	17,877
Automotive diesel oil	12,968	12,298
Aviation turbine fuel	5,284	4,848
Fuel oil	1,796	³ 1,960
Liquefied petroleum gas	^{2,3} 1,448	³ 4,180
Industrial and marine diesel fuel	45	89
Bitumen	638	776
Lubricants	788	519
Aviation gasoline	137	103
Heating oil	243	118
Other	6,178	⁴ 5,084
Total refined products	47,767	47,850

1) Source: ABARE: *Australian Commodity Statistics, 1997*; 2) Includes by-products of petrochemical and downstream processing; 3) ABARE estimate; 4) Includes petrochemical and non-commercial use of all products plus refinery fuel, but petroleum products produced from the conversion of other petroleum products have been netted off

2.5 Use

Some data on sales of consumer chemicals and agricultural and veterinary chemicals is presented below. There is no available summary information on the quantities of industrial chemicals used in the workplace.

2.5.1 Consumer chemicals

Consumer chemicals are those that are bought by the Australian consumer 'over the counter'. These chemicals include, for example, cleaning products such as disinfectants, personal insecticides, and pharmaceutical and personal care products. Many of these chemicals are already accounted for in Table 2-1.

In 1996–97, Australians spent:

- A\$1,200 million on non aerosol household cleaning products,
- A\$906 million on personal hygiene products, and
- A\$116 million on insecticides.

In relation to aerosols alone, 182 million aerosol units were manufactured in the 1997/98. Of these, 170 million were sold in Australia and 12 million exported to New Zealand.

2.5.2 Agricultural and veterinary chemicals

Information on the sales of agriculture and veterinary chemicals can serve as guide to their level of usage in Australia.

The National Registration Authority collects data on the sales of a range of chemicals related to agricultural and veterinary products. In 1996, agricultural and veterinary products accounted for over A\$1 660 million of sales, though it should be noted chemicals such as herbicides, insecticides (applied in homes or commercially) and fungicides are accounted for separately (but still considered ag/vet products). Table 2-5 details this.

Table 2-5: Agricultural and veterinary chemical sales, 1996

Product	Sales, A\$
Herbicide	626 624 637
Insecticide commercial	262 879 218
Insecticide Household	51 546 298
Fungicide	91 486 927
All Vet 1996 Sales	426 256 445
All Ag 1996 Sales	1 235 681 782
Inclusive Ag & Vet 1996 Sales	1 661 938 227

Data on Agricultural and Veterinary Sales 1996 provided by the National Registration Authority.

2.6 Chemical waste

Very limited national uniform information presently exists on the generation of chemical waste in Australia. Recently, a number of cooperative Commonwealth, State and Territory government programs have been initiated to address this deficiency including the National Pollutant Inventory and the Australian Wastes Database. These are discussed in Chapter 6.

In addition, information on chemical waste generation, transport and disposal is available at the State and Territory level of government. For instance, the Victorian Environment Protection Authority maintains the TRANSCERT database that collates information collected under Victoria's *Environment Protection (Transport) Regulations 1987*, designed to track the movement of wastes from 'cradle to grave' through the completion of a certificate at each stage of waste movement from producer through to final disposal. Other States and Territories maintain similar systems and, more recently, all levels of government have agreed to introduce more consistent regulations for the trans-boundary movement of hazardous wastes. This is also discussed in Chapter 6.

3

Chapter

LEGAL INSTRUMENTS AND REGULATORY MECHANISMS FOR MANAGING CHEMICALS IN AUSTRALIA

Under its Constitutional arrangements, as outlined in Chapter 1, Australia has a federal system of government which splits legislative powers and responsibilities between different jurisdictional levels.

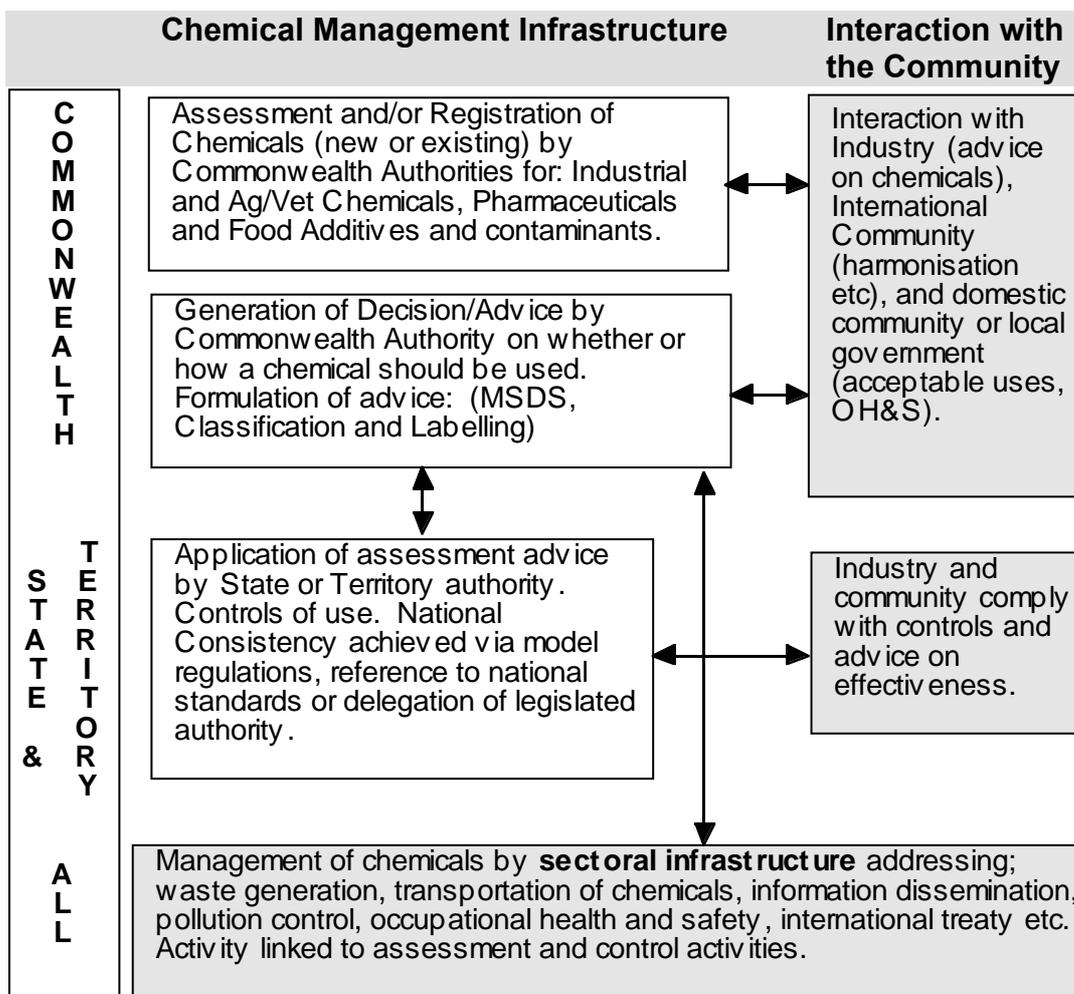
These arrangements, and the number of government agencies involved, have influenced the development in Australia's infrastructure for chemicals management. This Chapter briefly describes this infrastructure.

3.1 Introduction

This Chapter outlines Australia’s chemicals management infrastructure by examining the regulatory processes which support chemicals assessment and the control of use for industrial and agricultural and veterinary chemicals. The infrastructure for managing food additives and pharmaceuticals is also addressed in brief. Lifecycle influences on chemicals management such as transportation, occupational health and safety and waste are reviewed.

Assessment and registration of chemicals takes place at the national level (Commonwealth). Control of usage and sales is primarily the responsibility of the six States and two Territories. These complementary regulatory pathways (State or Commonwealth, chemical type, and stage of chemical lifecycle) create linkages which are set out in Figure 3–1.

Figure 3–1: Overview of chemicals management infrastructure



Chemicals management infrastructure, summarised in Figure 3–1, is supported by a wide range of legislative instruments. (Appendix 1 summarises relevant legislation, identifying the responsible agencies).

The following sections focus on the national policy and regulatory mechanisms supporting our chemicals management arrangements in the area of assessment of chemicals and clarify the linkages between national and State responsibilities.

It is important to note that some areas of chemicals management are not described exhaustively. Detailed information on State, Territory and Local government chemicals management activity is limited in this profile. There is a range of important activity impacting on chemicals management at these levels of government and future national profiles could seek to provide a more in depth coverage.

3.1.1 Recent evolution of Australia's chemicals management

Regulatory approaches to much of the management of chemicals in Australia have changed significantly in the 1980s and 1990s. These changes represent priorities identified by governments, particularly in relation to more consistent national approaches, avoidance of duplication and enhanced protection for workers, the public and the environment.

Appendix 1 identifies the legislative activity underpinning the evolution of Australia's chemicals management infrastructure. Many of the key laws for administering chemicals have been enacted only within the past decade. At the national level, effort has been directed towards developing four key schemes that together manage the assessment and/or registration of chemicals. These four schemes correspond to the four common applications of chemicals:

- agriculture;
- industry;
- pharmaceuticals;
- food.

In developing these schemes, Commonwealth, State and Territory governments agreed to use centralised assessment programs, thus avoiding duplication, decreasing costs and reducing the burden on industry. Most of the national assessment and registration schemes operate on full cost recovery.

The changes to Australia's chemical management infrastructure over the last decade extend assessment and registration programs, with new State and Territory legislation also directed at improving the management of chemicals across their lifecycles. These lifecycle approaches are outlined in Appendix 1 and discussed in the section 3.7 below.

The four key national schemes for the common applications noted above are:

- National Registration Scheme for Agricultural and Veterinary Chemicals (section 3.2);
- National Industrial Chemicals Notification and Assessment Scheme (NICNAS) which is for industrial Chemicals (section 3.3);
- Therapeutic Goods Administration (TGA) for pharmaceuticals and regulation of poisons (section 3.4);
- Australia New Zealand Food Authority (ANZFA) for food additives and contaminants (section 3.5).

As noted above, the scope of each scheme reflects end usage. For example, industrial and agricultural/veterinary chemicals are addressed in terms of public health, occupational health and safety (OH&S), the environment and possible trade effects, while schemes regulating food additive and pharmaceutical focus on human health. Each of the schemes provides a consistent set of standards to be applied across jurisdictions in the risk management of chemicals.

The schemes share a number of features in common. For example, the schemes for industrial and agricultural and veterinary chemicals both assess new and existing chemicals at the national level. They both rely on the professional skills of other government departments with the appropriate area of responsibility to conduct certain aspects of the risk assessment, thereby providing a greater degree of independence and confidence in each assessment. However, the schemes are not identical in how they regulate chemicals, reflecting important differences in the level of national versus State and Territory management undertakings.

The management of agricultural and veterinary products reflects Australia's export orientated and highly competitive agricultural sector. The potential impact of a single inappropriate use of an active constituent can be severe, and includes loss of trade or commercial viability, damage to the ecosystem and to public or worker health. Because of the relatively small number of ag/vet chemical (only 600) and limited number of specific ag/vet products (only 5,000), it has been found both practical and effective to develop and enforce a uniform system of management at the national level. Note that ag/vet *chemical* usually refers to the active constituent (which might appear in more than one product) whereas ag/vet *product* refers to the shelf product (e.g., can of flyspray) bought for use (which might contain more than one active constituent).

The management of industrial chemicals seeks to ensure that all chemicals are assessed in a consistent manner and that the wide variety of industrial chemical applications can proceed with a good understanding of the environmental, health and safety implications. However, the industrial chemicals infrastructure must cope with more

than 40,000 chemicals with over 400,000 potential end use applications. These large and diverse areas are managed at the national level by assessing risk with industrial chemicals in OH&S, public health and the environment. States and Territories also manage these risks at their individual jurisdictional level by applying their extensive legislation relating to environment protection, waste, OH&S, etc. and drawing on NICNAS assessments.

3.2 Managing agricultural and veterinary products and chemicals

In Australia, the term *agricultural and veterinary products* (ag/vet products) covers a large group of diverse compounds, many of which have been developed primarily to protect crops, livestock and domestic animals. An agricultural chemical is commonly known as a *pesticide herbicide* or a *veterinary chemical*. Ag/vet products are defined as a substance (including those in animal feeds) used to stupefy, repel, inhibit the feeding of or prevent pests on plants or other living things; destroy a plant or modify its physiology; or to attract pests to destroy it; or a substance for preventing, diagnosing, curing or alleviating disease in animals. Fertilisers and soil conditioners are not considered to be ag/vet products.

Australia depends on its agriculture industry to generate a significant portion of the nation's wealth. In pursuing productivity gains, agricultural industries have become increasingly dependent on agricultural and veterinary chemicals.

To ensure that their use DEHs not pose any unacceptable risks to the environment, to public or worker health, or to trade and commerce, and to ensure that the products are effective, Australia has established a national agricultural and veterinary chemical and products registration scheme. At present the scheme covers about 600 active constituents and about 5,000 specific products.

3.2.1 National Registration Authority for Agricultural and Veterinary Chemicals and Products

Early in the 1990s the Commonwealth, State and Territory governments agreed to establish a single National Registration Scheme for agricultural and veterinary chemicals and products. This scheme replaced the pre-existing State and Territory schemes and became fully operative in 1995.

Before any ag/vet products or chemicals can be supplied or sold in Australia, the National Registration Scheme requires that they be registered by the National Registration Authority for Agricultural and Veterinary Chemicals (NRA).

The NRA was established by the *Agricultural and Veterinary Chemicals (Administration) Act 1992*. The Commonwealth, State and Territory governments then provided the NRA with extensive powers in 1994 related to ag/vet products by each introducing legislation known as the *Agricultural and Veterinary Chemicals (Code) Act 1994* (refer Appendix 1). This network of legislation requires that before any ag/vet chemical or product can be supplied or sold in Australia, it must be registered by the NRA. The registration process is detailed in section 3.2.2.

Compliance with the provisions of the Agricultural and Veterinary Chemicals Code, up to and including the point of retail sale for ag/vet products, is managed via a national compliance program administered by the NRA. Legislation provides for strict penalties for non-compliance. A licensing scheme for manufacturers of veterinary drugs is also administered by the NRA to ensure veterinary manufacturers meet good manufacturing practice standards.

Further details on the management of ag/vet products are provided at Appendix 3 of this Profile.

3.2.2 Registration Scheme—evaluation and approval of agricultural and veterinary products

The registration process administered by the NRA is rigorous. It involves an evaluation of each chemical's effect on the safety of humans and the environment, the safety of non-target plants or animals, and the chemical's efficacy and impact on trade.

These separate components are addressed by different organisations according to areas of expertise and responsibility, with the NRA receiving professional advice in the form of risk assessments from the Department of Health and Aged Care (on human health effects), Environment Australia (on environmental impacts) and the National Occupational Health and Safety Commission (on worker safety). The NRA also evaluates the chemistry and efficacy of products and the presence of residues in food.

These components are used by NRA in considering the proposed uses of an ag/vet product. Any product deemed to pose a high risk to safety will not be registered or will have restrictions placed on its use. When it completes its review the NRA approves the label that the chemical manufacturer must place on its product. The label describes the product and specifies (through State and Territory legislation and enforcement) how a product may be used, including relevant safe handling information.

The NRA also recommends maximum residue limits (MRLs) to the Australia New Zealand Food Authority (ANZFA), which then undertakes a detailed assessment to evaluate the risk to public safety

through dietary exposure. This leads to the establishment of MRLs in food legislation (section 3.5.3).

The scheme also includes the assessment of all technical-grade active constituents used to formulate agricultural products. The objective is to ensure that the level of active constituent and the impurity profile is acceptable. The quality of veterinary products is also regulated through a program which enforces Good Manufacturing Practices.

3.2.3 Existing Chemicals Review

The scheme also allows the NRA to re-assess registered chemicals with a view to identifying and managing any problems that may have emerged since registration. If new information raises doubt about the safety of a product, the NRA can deregister it or impose additional restrictions on its use. In recent years, numerous products have been withdrawn or have had severe restrictions placed on their use (for example, certain persistent organochlorines, mercurial fungicides, dithiocarbamates such as Ferbam, Maneb and Nabam, and nitrofurans).

This activity is completed by a range of programs (Appendix 3) illustrated by the Existing Chemical Review Program (ECRP). The ECRP is commenced in late 1996, and provides for the comprehensive review of registered ag/vet chemicals. Since its inception, it has begun review of twelve chemicals, finalised three reviews (mevinphos, atrazine and endosulfan), and has another three close to completion. To complement the ECRP (which is exhaustive and wide ranging), NRA also conducts special reviews which tend to focus on particular applications of, or concerns with, certain products. In 1996-97, 19 reviews were progressed, 14 more were proposed and 8 were completed.

3.2.4 Control of use of agricultural and veterinary products and chemicals

The registration scheme provides for the NRA to control ag/vet products up to and including the point of sale. State and Territories are responsible for the control of use of ag/vet products beyond the point of sale.

The States and Territories administer a range of legislation controlling the use of ag/vet products after they have been sold, with the fundamental requirement being the enforcement of the label directions specified by the NRA.

The activities of the States and Territories include:

- licensing of commercial pest control operators, ground and aerial spray operators, and pilots;
- investigation of, and remedial action for, adverse incidents such as spray drift and poisoning of wildlife;

- monitoring programs for detecting violations of standards for agricultural product residue.

Appendix 1 summarises State and Territory legislation governing these management activities. Important legislation includes various pesticide acts that enforce requirements for the storage and disposal of NRA registered products (as defined by the product label and by OH&S legislation enforcing worker protection requirements).

There is a close interrelation between the NRA and the agencies responsible for administering such legislation. This interrelation is maintained by a series of committees (section 4.3).

3.2.5 Other activity

Australia's infrastructure for managing ag/vet products extends beyond registration and control. Examples include quality assurance programs and waste management. These other activities are discussed further at Appendix 3 and Chapter 6.

3.3 Managing industrial chemicals

In relation to Australian chemical regulation, the term *industrial chemicals* includes a wide range of chemicals such as dyes, solvents, plastics, laboratory chemicals, paints, cleaning agents and cosmetics. Chemicals not classified as industrial chemicals include radioactive chemicals as well as chemicals solely dealt with by other schemes (sections 3.2, 3.4 and 3.5). The first stage of managing an industrial chemical is the assessment of the chemical's effects and potential risk to workers, the wider community and the environment.

3.3.1 The National Industrial Chemicals Notification and Assessment Scheme

The Commonwealth's *Industrial Chemicals (Notification and Assessment) Act 1989*, provides for a national scheme for the notification and assessment of industrial chemicals. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) was established in 1990 and is administered by National Occupational Health and Safety Commission (NOHSC). NICNAS mainly concentrates on the assessment of *new* industrial chemicals prior to their introduction (importation and/or manufacture) in Australia, though it also addresses *priority existing chemicals*. An important distinction between the NRA and NICNAS is that NICNAS DEHs not assess industrial products.

The legal device that largely determines whether an industrial chemical can be used commercially in Australia, and that distinguishes *new* from *existing* industrial chemicals, is known as the Australian Inventory of

Chemical Substances (AICS). All chemicals on the AICS are defined as existing, while any industrial chemical *not* included in the AICS is regarded as a *new* chemical. Any new industrial chemicals being introduced into Australia must be notified and/or assessed by NICNAS.

AICS began as a listing of all industrial chemicals used in Australia between 1 January 1977 and 28 February 1990 and subsequently has had new chemicals added to it.

Penalties for non-compliance can be enforced under the NICNAS legislation and the Act also provides for an inspectorate empowered to collect information to ascertain compliance with the Act or regulations.

3.3.2 Assessment of industrial chemicals

The assessment process administered by NICNAS is rigorous and addresses new chemicals and existing chemicals.

Assessments of new chemicals

The assessment process for new chemicals begins with a primary toxicological assessment, conducted by NICNAS staff and an environmental assessment conducted by Environment Australia for NICNAS. These form the basis for further assessments relating to occupational health and safety, public health (conducted by the Department of Human Services and Health) and the environment. An explanation of the assessment process and the data which must be included in applications is at Appendix 2.

Applicants for notification are provided with copies of full assessments as well as assessment certificates, which are valid for five years. While a certificate is in force, other importers or manufacturers of the chemical must make separate application before they can introduce it, unless they reach an agreement with the original certificate holder and apply for a certificate extension. On expiration of an assessment certificate, the chemical is listed on AICS. Once listed, an industrial chemical entity is not subject to any further notification and assessment under NICNAS, except for the Priority Existing Chemicals program, which provides an continuing opportunity to review *any* industrial chemical.

Under certain circumstances a permit, rather than certificate, application may be made. This DEHs not involve such a comprehensive assessment and the new chemical is not subsequently added to AICS.

The assessment report, excluding certain confidential information, is available to the public.

Assessments of existing chemicals

NICNAS commenced only in 1990, so that most of the more than 40,000 chemicals on AICS have never been formally assessed. Therefore, NICNAS provides for the declaration of existing chemicals that are of most concern, called Priority Existing Chemicals (PEC) because of their potential for adverse effects on occupational health and safety, public health or the environment.

The public may nominate chemicals to be included in the PEC selection process. Nominated chemicals are screened and ranked against predetermined selection criteria. Declaration of a PEC is made by the Minister for Workplace Relations and Small Business. Chemicals that do not have to be notified as new chemicals, either because they are listed on AICS or because they are exempt from notification (Appendix 2), may also be selected and assessed under the PEC program.

3.3.3 Controls on use of industrial chemicals

Use of industrial chemicals is controlled in Australia via the application (and dissemination) of the assessments and the management of industrial chemicals by Commonwealth, State and Territory governments. This is set out diagrammatically in Figure 3-2. Note that, as there already exists a large historical body of chemicals approved for use prior to the introduction of NICNAS, the controls on use in areas of environment, transport, waste etc. will have developed controls based on information from sources other than NICNAS, see section 3.7. NICNAS can, of course, review these chemicals through PEC.

Applying assessments

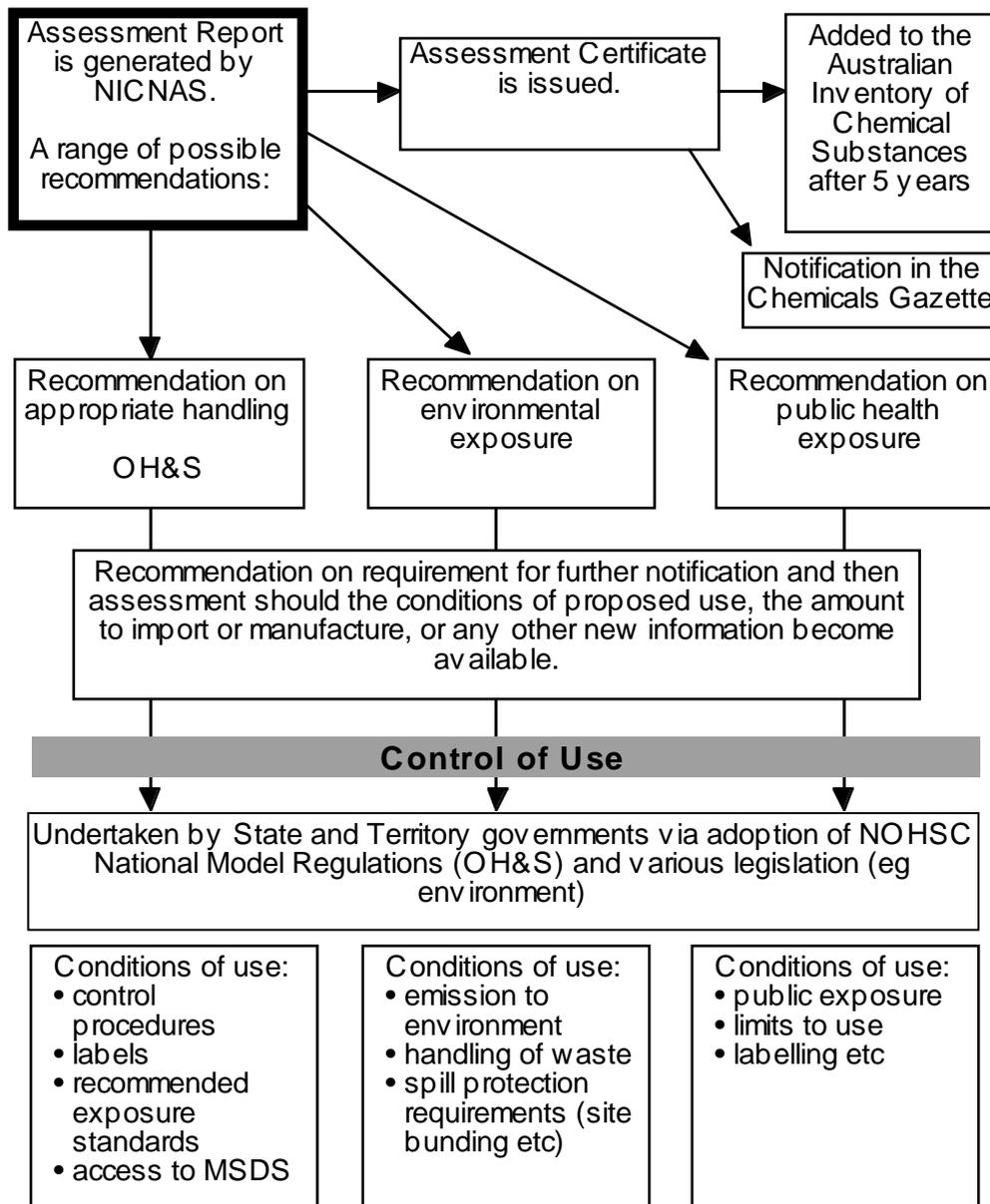
NICNAS compiles the assessments of new and existing industrial chemicals into reports which are sent to interested Commonwealth, State and Territory authorities. Assessment reports may make recommendations—including any restrictions or precautions—relating to:

- manufacture;
- import, handling, storage, use and disposal;
- packaging, labelling and the MSDS relevant to the range of standards.

These recommendations may then be adopted by authorities as part of their control of the use of industrial chemicals.

Figure 3–2 outlines the application of NICNAS Assessment Advice. It is important to note that chemicals are also managed by different methods depending on where a chemical is at in its lifecycle. These areas of regulation are discussed in section 3.7 and include use, emissions, transport and waste disposal.

Figure 3–2: Application of NICNAS assessment advice



Management of industrial chemicals at point of use

The States and Territories control use of industrial chemicals mainly by exercising their extensive powers relating to prohibition, application of occupational exposure standards, and health surveillance requirements. Many of the controls on industrial chemicals focus on controlling a chemical at a particular stage of its lifecycle or in a particular situation, these areas include worker safety, transport, public health, environment protection and the handling of hazardous substances, including their disposal as waste. Many of these controls are discussed in section 3.7 and their legislation is set out in Appendix 1. The connection between worker safety and industrial chemicals is particularly important and is addressed by the National Model Regulations.

National Model Regulations

One of the main purposes of industrial chemicals assessment and notification is to identify hazardous substances, primarily but not exclusively industrial chemicals, proposed for use in the workplace. These are regulated by a coordinated framework based on the National Occupational Health and Safety Commission Hazardous Substances Regulatory package. The centrepiece of this package (described more fully at Appendix 2) is the *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)].

Commonwealth, State and Territory governments have enacted, or are in the process of enacting, hazardous substances legislation based on the national regulatory package. Once in place across all jurisdictions, the package will provide for a scheme to protect workers from the effects of certain hazardous chemicals and will form a major component of the industrial chemicals workplace management infrastructure in Australia.

Other aspects of OH&S are discussed in section 3.7.1.

3.3.4 Other activity relating to management of industrial chemicals

In addition to assessment by NICNAS and regulation by legislation, other activity is also important in the overall management of industrial chemicals. Examples include pollution control, waste management and cleaner production (or sustainable chemistry). Such management activities are addressed in section 3.7 and Chapter 6.

3.4 Managing therapeutic goods and poisons

In Australia, the terms *pharmaceutical chemicals* and *therapeutic goods* cover a range of products including prescription medicines, therapeutic devices, and non-prescription medicines (including complementary medicines, herbal products, vitamins and nutritional products, and homoeopathic preparations). These goods are managed by the Therapeutic Goods Administration (TGA), discussed in section 3.4.1.

In addition to the management of therapeutic goods, Australia also regulates a wide category of chemicals considered to be *poisons* (section 3.4.2 will discuss their management).

3.4.1 Therapeutic Goods Administration

TGA is a Division of the Federal Department of Health and Aged Care and is responsible for regulating the supply in Australia of therapeutic goods.

The *Therapeutic Goods Act 1989* and the Regulations to the Act provide the basis for a uniform national regulatory system. Control is through two primary mechanisms: entry of products on the Australian Register of Therapeutic Goods (ARTG) and the licensing of manufacturers. TGA also regulates clinical trials and advertising and conducts post marketing surveillance.

The evaluation and registration process for therapeutic goods

Before a drug product or medicine can be marketed in Australia, it must be entered in the ARTG. Products are reviewed at a level consistent with the risk associated with their use in the community and entries are classified as either *registered* or *listed*.

There are approximately 30,000 medicinal products registered or listed for supply on the Australian market.

Registered products are evaluated for safety, quality and efficacy against the proposed therapeutic claims. Registration involves a thorough evaluation and is applicable to prescription medicines, and some non-prescription medicines.

Therapeutic goods are listed if they do not contain scheduled poisons and are known to be relatively safe when used as directed. A co-regulatory approach is used and an Electronic Lodgement Facility is available for listed products. There are several independent expert committees which provide advice to the TGA regarding evaluations of applications and other regulatory matters.

Low-risk products, which may contain vitamins, minerals herbs and traditional medicines are assessed for quality and safety, but receive a lower level of pre-market scrutiny than conventional medicines.

Those substances which are likely to be abused, such as morphine, codeine and amphetamine-type stimulants, as well as essential chemicals used in their manufacture, have additional controls imposed on them in relation to import, export, and manufacture.

Licensing and auditing of manufacturers

Manufacturers of therapeutic goods are licensed and inspected by TGA auditors to ensure compliance with good manufacturing practice. For imported products, the TGA program includes inspection of overseas manufacturing plants which are required to operate to standards similar to those expected of Australian manufacturers.

Clinical trials

The TGA is involved in the regulation of clinical trials in Australia. A small number of clinical trials proceed after a formal evaluation and approval process under the Clinical Trial Exemption (CTX) Scheme. The

majority of clinical trials in Australia are conducted under the Clinical Trials Notification (CTN) Scheme, which DEHs not involve evaluation or approval by the TGA. Under the CTN Scheme, responsibility for approving the conduct of clinical trials rests with institutional ethics committees.

Post-marketing surveillance

Post-marketing activities include problem reports monitoring, laboratory testing, and surveillance to ensure compliance with the legislation.

The Adverse Drug Reactions Section receives and collates reports of suspected adverse reactions from health professionals and sponsors. The Adverse Drug Reactions Advisory Committee (ADRAC), a subcommittee of the Australian Drug Evaluation Committee (ADEC), reviews and provides advice regarding these reports.

Control of drug promotion and advertising

Australia has a system of co-regulation for promotion of prescription and non-prescription therapeutic goods, with government support for industry self-regulation. The industry associations representing manufacturers prepare ethical codes that set advertising standards that must be met by member companies.

Review of changes to the drug regulation process

The 1991 Baume Inquiry into pre-market evaluation procedures of prescription drugs preceded major reforms of therapeutic goods regulation in Australia. Those changes were designed to provide appropriate community protection together with timely access to new drugs.

In April 1997, in response to the TGA Review (1996), the Government announced its commitment to further streamlining of the regulation of medicinal products in Australia. Some of the areas under review include:

- the role and regulation of complementary medicines;
- availability of drugs for the treatment of rare diseases (orphan drugs);
- extension of cooperative arrangements with the New Zealand regulatory agency;
- export arrangements for medicinal products.

The TGA is also streamlining Australia's evaluation system by ensuring greater consistency with international best practice and use of international standards.

3.4.2 Controls over medicinal products & chemicals in consumer products through poisons scheduling

Chemical products intended for consumer use and generally available through retail sale to the public are usually not regulated through one of the schemes described elsewhere in this Profile. However, if they contain chemicals which may be hazardous to the user or to the general public, particularly if improperly used, States and Territories may impose controls over availability, packaging and labelling through their *poisons legislation*.

Many pharmaceutical and ag/vet chemical products may also present a risk of poisoning if improperly used, so they may also require poisons scheduling. For example, all ag/vet chemicals are assessed to determine whether or not they require scheduling.

Such chemicals and products are examined by the National Drugs and Poisons Scheduling Committee (NDPSC), who may recommend their scheduling by inclusion in the Standard for Uniform Schedule of Drugs and Poisons (SUSDP).

Controls include restricting the availability or supply. For example, the supply of pharmaceutical products may be restricted to prescription only or, if available over the counter, may be restricted to sale only through pharmacies or licensed outlets. Retailers of the most dangerous poisons may require licenses. Other controls include specifications on the type of packaging and labelling, with emphasis on instructions for avoidance of poisoning, or first aid instructions if poisoning has occurred.

3.5 Managing food additives & contaminants

Food additives and contaminants are managed in Australia through the Food Standards Code and Amendments by the Australia New Zealand Food Authority (ANZFA).

3.5.1 The Australia New Zealand Food Authority

The Australia New Zealand Food Authority (ANZFA) is a statutory authority operating under the *Australia New Zealand Food Authority Act 1991*. ANZFA is a partnership between ten governments: the Federal, State and Territory governments of Australia and the New Zealand Government. ANZFA develops food standards and other regulatory measures for Australia and New Zealand. Food standards are published in the *Food Standards Code* once they are approved by ANZFSC.

ANZFA is currently reviewing the *Food Standards Code* with the aim of developing a joint Australia New Zealand Food Standards Code. The new code will deliver food regulations which are consistent, easier to

interpret, less prescriptive, more generic, and fewer in number. This review is scheduled for completion by the end of 1999.

3.5.2 Regulation of additives

Additives are substances added to food but not normally consumed as foods by themselves. Food additives are generally used in very low quantities and perform a variety of functions including preservation, improved palatability and appeal, and prevention of oxidation. The use of these food additives is regulated by the *Food Standards Code* and enforced in Australia under State and Territory food laws.

For a food additive to be accepted, ANZFA must know that it poses no threat to health when used in amounts up to the approved limits even after a lifetime of consumption. To achieve this objective, a complete toxicological data package, including studies that assess the carcinogenic potential of the food additive, must be submitted to ANZFA for assessment before an additive can be approved for use. Any request to extend the use of an additive is assessed carefully, and includes toxicological evaluation.

The amount of a particular additive allowed to be used in foods is determined by evaluating the toxicological profile, and reviewing the technical justification and expected product range.

3.5.3 Regulation of contaminants in food

Food contaminants are generally considered to be those substances present in food at levels which serve no desirable function and whose presence may lead to adverse health effects. In the majority of cases, contaminants serve no nutritional function, although some, such as copper, selenium and zinc, are essential micronutrients which may have an adverse health effect at high levels of consumption.

In Australia, action to ensure that contamination of food is as low as reasonably achievable may be taken in a variety of ways, including the development of control measures at the source of contamination, the enforcement of both Good Agricultural Practice (GAP) and Good Manufacturing Practice (GMP) and, if necessary, the establishment in food standards of maximum permitted concentrations (MPCs) of contaminants in particular commodities.

ANZFA has responsibility for establishing MPCs for contaminants in food. The MPC for a contaminant is the maximum concentration of a substance permitted in a food commodity and is the legal limit enforced through Food Standards. MPCs are generally used when other mechanisms of control are considered insufficient or inadequate to safeguard the health of consumers.

The decision about the choice of risk management option (MPC or another) is generally based on consideration of the following points:

- the potential for a human health risk posed by the contaminant;
- the nature and severity of the potential health risk, particularly in susceptible population groups;
- the frequency with which contamination of a particular food occurs;
- the importance of the food in the total diet (especially staple foods and human milk) and identification of the most exposed consumer groups;
- the feasibility of measuring the level of the contaminant in a reliable manner in an adequate number of food samples;
- if the contaminant is also a micronutrient, e.g., copper, the potential nutritional effect of controlling the contaminant must be taken into consideration, as well as the potential for micronutrient interaction.

If the source of the contaminant can be identified, consideration should be given to whether entry of the contaminant into the food chain can be prevented at this point, e.g., PCB contamination of food may be controlled by reducing general environmental levels of PCBs. If appropriate, these procedures may be incorporated into relevant industry food safety plans.

3.5.4 Regulation of agricultural and veterinary chemicals residues in food

The use of agriculture and veterinary products may lead to the presence of residues in food. As discussed in section 3.2.2, the NRA evaluates the presence of residues in food and recommends to ANZFA the establishment of Maximum Residue Limits (MRLs) under the Food Standards Code. ANZFA then undertakes a detailed assessment to evaluate the risk to public safety through dietary exposure. This leads to the establishment of MRLs in food legislation. MRLs are set as low as is reasonably achievable within the context of good agricultural practice and are generally well below the level known to lead to adverse health effects.

3.6 Summary of infrastructure for managing chemicals in Australia

The four chemical management programs discussed in the previous sections of this Chapter form an introduction to chemicals management in Australia. The programs have been designed to avoid duplication and operate in a complementary way. This approach, described in sections 3.2 to 3.5, is summarised in Table 3-1.

Table 3–1: Key elements of management infrastructure

Element	Industrial Chemicals	Agricultural and Veterinary Products	Pharmaceuticals	Food Additives
Scheme Responsible for Assessment	National Industrial Chemicals Notification and Assessment Scheme (NICNAS)	National Registration Scheme for Agricultural and Veterinary Chemicals managed principally through the NRA	Therapeutic Goods Administration (TGA)	Australia New Zealand Food Authority (ANZFA)
Assessment and/or Registration	All new chemicals to be assessed before use Existing chemicals reviewed on a priority basis	All new products and new uses of products must be assessed and registered before use. Existing chemicals and products may be reviewed	All new therapeutic goods to be registered on the Australian Register of Therapeutic Goods	Stipulates food standards to protect public health
Scope and definition	Assessment of a chemical entity (not product)—Any chemical that has an industrial use may be included i.e., dyes, solvents, adhesives, plastics, laboratory chemicals, paints, cleaning products, cosmetics and toiletries. DEHs not include articles, radioactive chemicals or chemicals solely in other schemes	Registration of products includes: an agricultural product which is a substance used to stupefy, repel, inhibit the feeding of or prevent, pests on plants or other things; destroy a plant or modify physiology; or attracts pest to destroy it Veterinary product includes a substance for preventing, diagnosing curing or alleviating disease in animals Excludes fertilisers	Assessment and Registration of therapeutic goods	Control of food additives and contaminants including preservatives, colours, MRLs, maximum contaminant levels
Controls of Use	If not on AICS (or has an assessment certificate or permit issued) may not be used commercially. May be removed from AICS. Application of assessment report recommendations by legislation at State and Territory level through adoption of NOHSC National Model Regulations for Hazardous Workplaces	If not registered may not be used Registration may specify how used. Registration can be cancelled Use controlled by State and Territory by application of NRA registration advice (Labels must be complied with)	If not registered, may not be used. Licensing of Manufacturer. Standard for Uniform Scheduling of Drugs and Poisons (SUSDP) controls use with Poison Schedule Classification	Food Standards Code (A14) control permissible additives, preservatives and colours Application of MRLs
Supporting Legislation	Industrial Chemicals (Notification and Assessment Act 1989, OH&S Acts, Poisons Acts, Standards	Agricultural & Veterinary Chemicals; (Code) Act 1994 and Administration Act 1994, State & Territory complementary legislation Control of use legislation including Pesticides, Poisons & Food Acts	Therapeutic Goods Act 1989, Poisons Act (various)	Food, Stock and Medicines Acts
Advisory products—including labels, assessment reports, safe use advice.	Chemical Assessment Reports, (NICNAS) Exposure Standards, Labelling, Material Safety Data Sheets, (NOHSC) SUSDP–Poison Schedule Classification	Product Assessment Labelling Maximum Residue Limits (MRLs), SUSDP–Poison Schedule Classification	SUSDP–Poison Schedule Classification	Labelling MRLs SUSDP–Poison Schedule Classification

3.7 Lifecycle aspects of chemicals management activities in Australia

The four major areas of management infrastructure (industrial chemicals, agriculture and veterinary products, food additives and pharmaceuticals)

outlined above address only a part of Australia's chemicals management infrastructure. There are a number of other activities that are also important, focusing on chemicals at a various stages of its lifecycle, and which are managed predominantly at the State and Territory level. As mentioned previously, these areas of chemicals management are comprehensive in Australia but, as they represent a large and varied body of material, this profile only provides a brief summary.

3.7.1 Occupational health and safety (OH&S)

A regime of State and Territory activity (and Commonwealth for Commonwealth employees) ensures that employers protect the health and safety of their employees and other persons at work. Effective management of industrial chemicals in the workplace depends on a range of OH&S legislation.

OH&S legislation in Australia tends to follow the model of an enabling statute, which assigns general obligations, duties and rights to the employer. This represents a shift away from the older style prescriptive legislation, such as the various factories and shops acts, which sought to regulate specified industries and processes. There are usually a number of chemically-related regulations or non-statutory codes of practice associated with these new acts. Appendix 1 sets out a range of supporting OH&S legislation.

A chemical, whether agricultural or industrial, is subject to assessments and control designed to protect human health in occupational settings. These relate to importation, manufacture and use of chemicals. These controls result in the use of Material Safety Data Sheets (MSDS—developed by industry and approved by government), consistent labelling and the use of risk or safety 'phrases'.

Occupational Health and Safety activities also address:

- hazard communication,
- record keeping,
- systems for education and training, and
- workplace assessments (with remedial action if necessary).

Industry organisations and unions are closely involved in these activities.

3.7.2 Environment protection and public health

Environment protection and public health are closely related in terms of Australia's chemicals management infrastructure. A law or regulation which controls the amount of a chemical emitted into the environment will consider both the impact on the environment and the impact on human, or public, health.

The potential for a chemical to impact adversely on the environment or on public health is a core assessment topic for both pesticides and industrial chemicals. Both the NRA and NICNAS rely on Environment Australia to assess the potential impact of a chemical on Australia's environment (taking in account our unique flora and fauna) and on the Department of Health and Aged Care (Commonwealth) to evaluate potential impacts on public health.

Australia is also establishing uniform air and water standards for certain chemicals across all jurisdictions through a joint Commonwealth, State and Territory process under the National Environment Protection Council (NEPC). The primary focus of the national air standards is to protect public health, whereas water standards are concerned with wider issues of environmental protection. The process of setting air and water standards will be supported by programs for monitoring the presence of chemicals in the environment. The NEPC is a coordinating mechanism (Chapter 4), which enables State, Territory and Commonwealth governments to agree binding regulations protecting the environment. These regulations are implemented at all levels of government and regulations now include air standards, a pollutant release inventory and controls on the movement of trans-boundary (internal to Australia) waste.

State and Territory governments are active in developing mechanisms to control the release of chemicals into the environment to protect both public health and the environment. States and Territories identify chemicals (including classes of chemicals) that can be released to the environment under certain operating conditions in their respective jurisdictions. They also specify other chemicals that may not be released into the environment.

States and Territories adopt a range of mechanisms to manage these chemical releases. Some mechanisms require emitters to pay by the amount of substance they release (polluter pays), determining the total load released to the environment in a given area. Other systems involve fixed fees, and still others encourage facilities to adopt best practice control systems with lessening regulation as an incentive. The full range of legislation addressing this activity is set out in Appendix 1.

The identification and management of contaminated sites is another area where governments act to protect the environment and human health.

Some recent initiatives relating to public health and environment protection include a campaign for the reduction of lead in fuel, supported by close monitoring of lead levels of blood in children in specific regions. In urban areas, activity has focused on promoting the responsible use of chemicals by the public. For instance, campaigns promoting improved air quality are designed to encourage or regulate the responsible use of combustion heaters in homes, while other campaigns encourage people to focus on how they manage the disposal of unwanted chemicals.

In agricultural areas, epidemiological investigations have examined possible negative impacts of pesticides on public health, for example the potential link between pesticide use and birth defects in the Coffs Harbour area of northern NSW (Paul Lancaster, 1984 to 1987).

The Commonwealth government generally only takes the national lead on environment protection or public health when an international treaty, obligation or recommendation requires action. Examples include the control of import and export of ozone depleting substances under the Montreal Protocol, and the prevention of hazardous waste exports under the Basel Convention. However, in these situations, States and Territories support and reinforce Commonwealth activity by instituting their own regime of controls (for instance, the ozone depletion control acts in each State and Territory) and the implementation of such initiatives can be best described as cooperative.

3.7.3 Transport, movement and storage

Controls on the transport, movement and storage of dangerous or hazardous goods are part of the infrastructure of chemicals management in Australia. Such controls are particularly important for industrial chemicals where bulk movements across the country are common.

Dangerous goods may be substances (or wastes) that are hazardous to the environment as well as substances that are toxic to humans. Wastes are discussed in section 3.7.4 below.

States and Territories are responsible for the safe transport and storage of chemicals through various Acts (Appendix 1). Land transport of dangerous goods is controlled under the Australian Code for the Transport of Dangerous Goods (based on the UN Recommendations on Transport of Dangerous Goods). The Code and regulations are being adopted uniformly by all States and Territories within their respective legislative frameworks.

The Dangerous Goods Code requires clear and consistent labels for goods being transported. The primary aim is to advise transporters of safety hazards, thus HAZCHEM Codes on labels advise on the hazard that may exist in emergency situations and provide the key to management of spills.

Managing the transport of dangerous goods concentrates on secure packaging and stowage and managing the consequences of release.

3.7.4 Waste chemicals

Chemicals usage and production can result in the generation of hazardous wastes, some of which are dealt with during processing or used as feedstocks for other processes.

Waste chemicals generally create a management issue for the Australian chemicals infrastructure when the waste:

- has the potential to impact on the environment;
- is transported for disposal, treatment or recycling;
- is abandoned;
- contaminates a site; or
- begins to impact on the environment.

Australia possesses a range of legislation at the State and Territory level which manages chemical wastes considered to be environmentally hazardous. The key mechanism of control is the issuing of licenses or prohibition. Legislation can also provide for the restoration of places contaminated by chemicals or wastes.

Many jurisdictions are taking the approach of managing waste at the source through cleaner production initiatives rather than just 'end of pipe' solutions. Industry has also focused on a range of waste minimisation schemes, such as production techniques that seek to avoid the generation of waste (Chapter 6).

Transport of hazardous waste is controlled at the regional level by State and Territory law through the application of several hazardous waste control systems. In order to provide a more uniform national control of waste movement, systems are being harmonised for transport across State and Territory borders through the National Environment Protection Measure for the Movement of Controlled Waste between States and Territories. Import and export of hazardous waste is controlled by the Commonwealth government as part of its obligations under the Basel Convention.

Unwanted or abandoned chemicals also present a management issue. National strategies have recently been developed to reduce stockpiles of unwanted chemicals and to avoid the generation of any future stockpiles, including the reduction of unwanted chemical containers.

The Scheduled Waste program is a prime example of this activity:

- In 1993, the Australian and New Zealand Environment and Conservation Council (ANZECC, Chapter 5) endorsed the National Strategy for the Management of Scheduled Waste. A core part of the National Strategy is the development of management plans for each category of scheduled waste: polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB) and organochlorine pesticides (OCPs). Management plans for PCBs and HCB waste have been endorsed by ANZECC and are being implemented by jurisdictions.
- A management plan for OCPs was given in-principle endorsement by ANZECC in December 1997 and ARMCANZ in Feb 1998. Implementation of this plan is pending agreement between government and industry to a national collection, storage and

destruction scheme (the National Collection Storage Destruction Scheme (NCSDS)) for these and other unwanted farm chemicals. NCSDS will seek to remove all unwanted chemicals from farms and appropriately store and destroy them. Discussion is also occurring between NGOs and government to ensure that stockpiles of unwanted farm chemicals do not build up in the future.

3.7.6 Summary

The scope of the activities identified in this Chapter is summarised in Table 3–2 which also identifies the activities in terms of industrial or agricultural/veterinary activity.

Table 3–2: Overview of other chemicals management infrastructure

Activity	Occupational Health and Safety	Themes			
		Environmental Protection	Public Health	Transport	Waste
International Areas	Various	Ozone Protection—bans a range of ozone depleting substances Prior Informed Consent— information exchange on hazardous chemicals to assist with import decisions	Various	UN recommendation on transport of Dangerous Goods	Basel Convention—regulates export of wastes considered hazardous
Industrial Chemicals	Application of NICNAS assessment report recommendations through State and Territory activities Application of NOSH regulatory instruments for hazardous substances to provide consistent protection of workers (section 4.2.1)	Air and water standards Pollution controls—licensing of industrial premises Assessment/ remediation of contaminated sites.	Air and water standards Urban airshed and water monitoring Chemical specific programs (e.g., lead strategy or Scheduled Waste)	Dangerous Goods transport—controls the movement of chemicals considered dangerous or hazardous to human health	Waste controls—regulates disposal and treatment of hazardous wastes (e.g., HCBs, PCBs) Waste Minimisation activity—encouraging the reduction of waste generation
Agricultural and Veterinary Chemicals	Application of NRA activity through labelling and controls of use and exposure standards	Eco-Safety of chemicals. Minimisation of unintended impacts. Adverse experience reporting and remedial activity Integrated Pest Management	Air and water standards Safety of chemicals MRLs for food National Residues Survey Total Diet Survey Withholding periods etc.	Dangerous Goods transport,	Strategies for unwanted chemicals and container management and collection

3.8 Australia's chemicals management infrastructure

This chapter has introduced the legal instruments and regulatory mechanisms underlying Australia's chemicals management system. Much of the infrastructure discussed in this chapter is relatively new and reflects both Commonwealth, State and Territory government priorities. The approach depends on the type of chemical and lifecycle stage that chemical is in.

With these new approaches, review has also become an important feature of Australia's chemicals management infrastructure. Every major scheme discussed in this chapter is either under review or has been examined within the past two years. For instance, a recent review into the regulatory arrangement for agricultural, veterinary and industrial chemicals (*Joint Review into Perceived Duplication in the Regulatory Arrangements for Agricultural, Veterinary and Industrial Chemicals*, DAFF/DWRSB 1997) concluded that no significant duplication existed in the areas of assessment, regulation and labelling, but that the systems could be more closely coordinated.

Chapter 4 examines the complementary nature of the system by describing the range of decision-making, coordinating, consultative and review mechanisms which support it.

Chapter

4

COORDINATION PROCESSES

This Chapter builds on information already provided in Chapter 3 by discussing coordination processes underpinning chemicals management in Australia.

4.1 Introduction

The Australian government seeks to establish mechanisms to encourage coordination and consultation in relation to the management of chemicals, both in terms of decision making and policy setting. This is in recognition of the federal nature of our constitutional arrangements, which divide functional responsibilities between different levels of government (as described in Chapter 3). It also reflects an understanding of the benefits of maintaining linkages and coordinating input from different areas within government and between the public, industry and specific interest groups.

The coordinating processes can be viewed from two different perspectives:

- Policy development which aims to set strategic directions for the chemicals management infrastructure and to resolve policy issues and differences (section 4.2).
- Operational schemes whose powers are described and defined by legislation (section 4.3).

4.2 Coordination of policy development

Australia's chemicals management infrastructure requires ongoing policy review and development. These rely on coordination processes which seek to build consensus, taking into account the Australian federal system of government, the need for coordination and cooperation within government and the need to seek direction from the broader community.

4.2.1 Commonwealth, State & Territory intergovernmental coordination of policy development

Australia operates with a federal system of government in which various functions are distributed between different levels of government. Distribution tends to cut across chemical management issues, which means that the development of new directions in chemicals management (such as the Dangerous Goods Code) usually proceed from a consensus arrived at in various councils of Commonwealth, State and Territory government ministers.

These ministerial councils possess broad decision-making powers in areas such as environment, health, and agriculture, and are important in ensuring that issues concerned with the management of chemicals in Australia are dealt with in a coordinated way by Commonwealth, State and Territory governments. An example of one such ministerial council is the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

Many such councils include a New Zealand Ministerial representative who participates in many of the decisions and new policy directions. However, New Zealand arrives at its own decisions with regard many chemicals management issues and its involvement in these councils is to primarily encourage closer bilateral cooperation.

Generally, the ministerial councils reach a consensus then coordinate implementation across the nine different Commonwealth, State and Territory governments. Each ministerial council is advised by a range of supporting committees whose tasks are to provide the council with recommendations and advice and to monitor implementation. The effect of ministerial council decisions vary, depending on the specific council, recommendation, and the willingness of governments to implement recommendations. Generally, each jurisdiction will evaluate ministerial council decisions, then propose implementation appropriate to their area of responsibility.

However, some councils' decisions are more binding on jurisdictions. For example, the National Environment Protection Council (NEPC) is able to make decisions which must be given effect by all member governments. NEPC was established in 1995 by legislation in each of the Commonwealth, State and Territory jurisdictions (nine in all) and consists of a government minister from each of the nine jurisdictions. NEPC was established to enable the development and implementation of consistent and national environmental protection policy through the development of National Environment Protection Measures. NEPC legislation requires that measures be developed in consultation with the community and all other affected parties. If NEPC agrees to a new measure, all jurisdictions are obliged to implement it (subject to parliamentary scrutiny). As at June 1998, NEPC had made measures for the National Pollutant Inventory (a Pollutant Release Register), the Movement of Controlled Waste across State and Territory borders, and Air Quality Standards.

The ministerial councils which affect chemicals management include the:

- Agriculture and Resource Management Council of Australia and New Zealand (for ag/vet chemicals);
- Labour Ministers' Council (for OH&S);
- Australian Health Ministers' Council (for poisons),
- Australian Transport Council and the Ministerial Council for Road Transport (for dangerous goods);
- Australia and New Zealand Environment and Conservation Council (for environment matters);
- National Environment Protection Council and the Australia and New Zealand Food Standards Council (for food standards).

4.2.2 Intragovernment coordination on policy

Governments in Australia whether at State, Territory or Commonwealth level also coordinate policy development between different departments in their jurisdictions. By using processes such as interdepartmental committees, they can develop consensus within government on a particular policy (developed independently by a separate Department and ultimately approved by a Minister) or direction on matters which transcend traditional agency responsibilities. This coordination assists each government in bringing a clearly developed whole-of-government position to a particular issue (often discussed at one of the ministerial councils listed above). Such processes are commonly limited in nature, focusing on particular policies or proposals. Such processes are also closely tied to Ministerial Councils (see 4.2.1) or specific Ministers.

At the Commonwealth level, processes which focus exclusively on chemicals management include:

- *Chemicals Clearing House*—consists of all relevant Commonwealth agencies (including NOHSC and NRA). It ensures an open flow of information between the agencies. The Clearing House was established in response to Agenda 21, specifically Chapter 19, which encourages the development of better coordination mechanisms.
- *Chemicals Treaties Inter-departmental Committee*—coordinates a whole-of-government response to treaties affecting chemicals management (see Chapter 8 for further detail).
- *National Chemicals Coordination Forum*—consists of all Commonwealth government agencies having responsibility for regulating chemicals. The Forum, which coordinates implementation of the recommendations of a recent government review (section 4.2.3), provides an example of how reviews often lead to increased coordination efforts amongst agencies.

It is important to note that these processes are primarily coordinating in nature with decision regarding policy being made by the relevant Minister or Ministers.

4.2.3 Coordination with the broader community

In developing policy, government also coordinates input from the broader community. This occurs in a number of ways, including establishment of community advisory committees, workshops and national consultation programs.

Two successful examples relevant to chemicals management, which illustrate the processes used, are:

- In recognition of the importance of safely managing ag/vet products the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) have recently completed development of

Management of Agriculture and Veterinary Chemicals: A National Strategy, which seeks to meet the challenge of improving the effective management of ag/vet chemicals. ARMCANZ consulted, through its various committees, with 700 stakeholders (including non-government organisations and government agencies), conducting a national workshop and consulting with an advisory group of community members. Stakeholders prepared more than one hundred submissions.

- As Australia has moved away from the use of persistent organic pollutants (scheduled wastes, section 3.7.4), stores of these unwanted chemicals have remained on farms, business premises and households around Australia. In 1994 the Australia and New Zealand Environment and Conservation Council (ANZECC) formed a National Advisory Body consisting of representatives drawn from farmers, unions, environment groups, local government and various industry bodies, to advise it on the development and implementation of national plans for the management and disposal of the wastes. This body has developed a range of successful management plans in cooperation with government and wide ranging consultation with all stakeholders.

Non-government organisations' views on consultation and contact between the community and government are discussed in section 5.10.

Review mechanisms

In addition to the types of coordination and cooperation noted above, governments undertake reviews of legislative and administrative activity from time to time in order to assess regulatory performance. These review mechanisms usually involve the broader community through formal submissions, hearings or the formation of review committees that include community members.

Examples of the type of review that have had a major impact on the management of chemicals in Australia are:

- Parliamentary review, such as the inquiry by the Senate Select Committee on Agricultural and Veterinary Chemicals in Australia (1990), the inquiry into Hazardous Chemicals (1992) by the House of Representatives Standing Committee on Environment and Conservation, and the NSW Parliament's Inquiry into Domestic Lead Pollution (1994);
- Review by government agencies, such as the NSW (Workcover) Chemicals Inquiry (1989), and the Industry Commission report into Occupational Health and Safety (1995);
- Review by independent bodies, such as the Review of Pesticide Residues in Agricultural Products conducted by the Australian Science and Technology Council (1989).

The impact of such reviews depends on their terms of reference, their scope and the ability or determination of parliaments or government departments to adopt and implement their recommendations. Governments generally respond positively to recommendations stemming from high level reviews. For instance, the review of the Small Business Deregulation Taskforce (1997) recommended the elimination of overlapping regulations for managing chemicals. In response, the Commonwealth government formed the National Chemicals Coordination Forum (section 4.2.2).

4.3 Coordination of operational schemes for chemicals management

A number of agencies have functional responsibility for implementing legislation and schemes for chemicals management. These responsible agencies have been discussed in Chapter Three and Appendix 1.

These agencies develop and apply coordination processes to ensure the effective implementation of their enabling legislation.

4.3.1 Commonwealth, State and Territory intergovernmental coordination

As discussed in Chapter 3, chemicals in Australia are subject to national level assessments (conducted by Commonwealth agencies) which are in turn used by State and Territory government agencies for controlling the use of chemicals.

To ensure that chemicals are safely managed, the two levels of government cooperate closely in applying the various controls. This can be illustrated by reference to the intergovernment coordination that occurs on national schemes for industrial chemicals and agricultural and veterinary chemicals.

Industrial chemicals—industrial chemicals assessment is provided by National Industrial Chemicals Notification and Assessment Scheme (NICNAS, section 3.3). NICNAS relies on a range of committees and contact networks. At the government level it relies on network of contacts established under a *Memorandum of Understanding (MOU)* between the Commonwealth, States and Territories regarding the functioning of NICNAS. Representatives from each government meet to discuss arrangements relating to the MOU and NICNAS and coordinate an overview of industrial chemicals in Australia.

The National Occupational Health and Safety Commission (NOHSC) is responsible for the maintenance of the regulatory framework for the workplace management of chemicals. NOHSC is a tripartite statutory body composed of State, Territory and Commonwealth agencies in

addition to several peak employer and employee organisations. The recommendations of the National Commission are given legislative effect when taken up in Commonwealth, State and Territory legislation.

Agricultural and veterinary chemicals—ag/vet chemicals and products are managed by the National Registration Authority (NRA). At the strategic level, NRA activities are directed by a Board of Directors. However, the NRA also relies on a range of committees to coordinate implementation of its registration activities. These committees and their functioning include the :

- *Registration Liaison Committee*, which consists of Commonwealth, State and Territory government representatives. It coordinates the registration functions of the NRA and the control of use functions of the States and Territories.
- *Residues Advisory Committee*, which exists to provide expert advice to the NRA on residue issues.

4.3.2 Intragovernmental coordination between different schemes

Intragovernment coordination of the different schemes discussed in Chapter 3 is accorded a high priority in Australia. Specifically, the assessment and registration schemes introduced in Chapter 3 rely on technical assessment advice from other, independent government agencies. For instance:

- The NRA relies on: Environment Australia for an assessment of a new product's potential environmental impact, the Department of Health and Aged Care for a toxicological evaluation and public health risk assessment, and NOHSC for an OH&S assessment.
- NICNAS also relies on: Environment Australia for an assessment of a new chemical's potential environmental impact, and the Department of Health and Aged Care for a public health risk assessment.

This means that registration or assessment represents the coordinated advice of all relevant Commonwealth agencies. This provides a degree of independence and robustness to Australia's assessment processes which is highly valued by all concerned.

Supporting these coordinated assessment or registration processes are a range of committees:

- *Inter-agency Coordinating Committee* of the NRA, which coordinates NRA activities between Commonwealth agencies;
- *Existing Chemicals Review Program (ECRP) Steering Group*, which provides a forum for the NRA and other Commonwealth agencies assisting in implementation of ECRP to review progress and resolve any issues;

- *Interagency Coordinating Committee*, which through its Commonwealth agencies membership provides for effective cooperation on industrial chemicals;
- *NOHSC Hazardous Substances Sub-Committee*, which ensures close coordination between NOHSC and NICNAS at the technical level.

It is important to note that such coordinating processes are also found at the State and Territory level.

4.3.3 Consultation with the broader community

The operation of specific schemes also relies on consultation with the broader community.

For instance, the NRA supports a range of consultative committees such as:

- *Agricultural Chemicals Consultative Committee*, consisting of industry representatives and the NRA, which discusses issues relevant to the registration of agricultural chemicals;
- *Veterinary Chemicals Consultative Committee*, consisting of industry representatives and the NRA, which discusses issues relevant to the registration of veterinary chemicals;
- *Community Consultative Committee*, consisting of community, labour and conservation organisations, which transmits the community view to NRA and recommends ways to address community concerns;
- *Industry Liaison Committee*, consisting of high level NRA and industry representatives, which exists as a high level forum to discuss issues such as cost recovery and streamlining of registration processes.

4.4 Comments

Chapter 4 has illustrated the range of processes designed to ensure the effective coordination of Australia's chemicals management infrastructure. These processes are important means for coordinating strategic directions and responses to emerging issues by all Commonwealth, State and Territory governments.

Some coordination processes are established on a semi-permanent basis, others are invoked when particular needs arise, as in the development of a new policy or in response to a review (section 4.2.3).

There is also a close interrelation between the community and government outlined in sections 4.2.3 and 4.3.3. The perspective of non-government organisations on this interrelation is discussed in Chapter 5, specifically section 5.10.

5

Chapter

CHEMICALS MANAGEMENT ACTIVITIES OF NON- GOVERNMENT ORGANISATIONS

This Chapter introduces the activities of non-government organisations supporting national efforts to manage chemicals.

5.1 Introduction

This Chapter describes the activities of non-government organisations (NGOs) that support the infrastructure for managing chemicals in Australia. NGOs include chemicals industry groups, primary producer organisations, users' groups, consumer groups, environment groups, local residents' groups and trade unions. All of these NGOs play important roles in chemicals management. The interrelationship between government and NGOs has been discussed in Chapter 4.

While not exhaustive, this Chapter provides an overview of NGO activities. Much of the information was contributed by NGOs themselves. Contact details for NGOs are listed in Appendix 5.

This Chapter begins with a general introduction to those NGOs in Australia which have interests in chemicals management. This is followed by contributions by NGOs themselves, organised in terms of:

- Chemicals assessment (section 5.2);
- Occupational health and safety (section 5.3);
- Stewardship or enforcement roles (section 5.4);
- Waste management (section 5.5);
- Sustainable chemistry (section 5.6);
- Monitoring (section 5.7);
- Informing the public (section 5.8).

5.1.1 Non-Government Organisations—who they are

NGOs involved in chemical management represent many sections of the Australian community and embrace a wide variety of concerns and perspectives. The activities of these groups also encompass many diverse programs. This Chapter will concentrate on the main NGOs active in the area of chemicals management. However, in order to demonstrate the scope of NGO activity in Australia, Chapter 6 also examines several smaller groups.

NGOs are traditionally grouped by their special focus on environmental/ community, labour or industry. These are outlined separately in the following paragraphs.

Environmental/community NGOs are usually large community-funded organisations that may be part of a world-wide network, such as Greenpeace, or that operate at a national level, such as the Australian Conservation Foundation (ACF) or the Total Environment Centre Inc (TEC). These groups take action through campaigns to protect the natural environment and stop pollution. They have extensive information

gathering facilities and convey information to governments and the community. They make policy recommendations and produce reports on many and varied environmental concerns ranging from the use of lead (several communities and NGOs concentrate almost exclusively on the health effects of lead in children) to proposals for relocating chemical storage facilities. In addition to these grass roots activities, environmental NGOs have lobbied governments on a wide range of issues. They have worked cooperatively on major national initiatives, an example being Greenpeace's involvement in environmental remediation at Homebush Bay, the site of the 2000 Olympics.

In recent years, some NGOs have also been active in the area of third party rights, including Community Right to Know provisions in legislation, as well as specific campaigns to obtain access to government and industry documents on chemicals management. The Public Interest Advocacy Centre and the state-based Environmental Defender's Offices have been in the forefront of this activity.

Local environmental NGOs are residential groups that are concerned about the state of their local environment. They often focus on a particular issue. One example of this kind of group is the Toxin Action Group, which was established in 1984 in response to long-standing community concern about pesticide usage and contamination on the north coast of New South Wales. TAG is an active member of the National Toxics Network, which is made up of over 300 like-minded groups and campaigners. TAG addresses a range of chemical issues including pesticide drift, toxins in schools, water residues and land contamination. Another, widespread, example are the local land-care groups which have been established across Australia and which address a wide range of resource management and environmental issues, including chemicals impacts, in seeking to improve and maintain the land.

Industry organisations have the aim of supporting the members of industry they represent. Increasingly, they are interacting with government programs and responding to community concerns. They also follow activities at the international level which are important for their members.

Industry organisations tend to concentrate on various programs aimed at directly managing chemicals used by their own industries. These programs might include better management of waste or more detailed instructions for use of a product. A number of these programs are regarded as successful chemicals management tools. An example is the Responsible Care Program for the Chemicals Industry developed by the Plastics and Chemical Industry Association (PACIA represents industry involved in chemicals and plastics manufacture). Another is the Agsafe program managed by Avcare (the National Association for Crop Protection and Animal Health formerly known as AVCA) which represents manufacturers and suppliers of ag/vet chemicals.

Managing the presence of ag/vet chemical residues in food also involves a number of industries. Primary industry commodity groups are increasingly establishing quality assurance programs within their industries. Food processors, marketers and retailers are also active in promoting quality assurance measures.

Trade unions in Australia are important in the chemical industry through their interest in the health and safety of workers. Unions are engaged in investigating specific health and safety problems and in developing standards and guidelines for safe handling of chemicals.

5.2 Assessment of chemicals

NGOs have a vast array of methods for gathering information on chemicals assessment. The Internet and e-mail have put even the smallest group in the position of being able to tap into current information sources on chemicals and their effect on human health and the environment.

Environment organisations such as Greenpeace, the Australian Conservation Foundation and the Total Environment Centre actively undertake research into particular issues such as persistent organic pollutants or greenhouse gas reductions. They have a large international network from which to gather information on chemicals that might pose a risk to the environment. They may also employ or have the voluntary support of chemical experts and provide advice on the effects of chemicals.

A national report produced by Greenpeace, *PVC Plastic: A Looming Waste Crisis (1998)*, is an example of the ability of Greenpeace to make use of this information network and produce detailed reports regarding environmental risks.

Regional community groups do not have the capacity to assess chemicals themselves. Rather they rely on a wide variety of sources from which to gather needed information on chemicals. Most information relating to chemicals comes from overseas contacts and databases. These contacts and databases inform them of the impact of chemicals on the environment and human health. If chemicals are suspected as the cause of a local incident, they will often attempt to gather and send away samples to be tested.

Industry bodies such as the Australian Paint Manufacturers' Federation (APMF), the Plastics and Chemicals Industry Association (PACIA) and the National Farmers' Federation, as well as **union bodies** such as the paint industry union, are able to obtain assessments of chemicals through government organisations such as the Occupational Health and Safety Commission. The APMF also participates in university studies.

The major assessment schemes presented in Chapter 3 are resourced by respective industry sectors on a user pays/cost recovery basis. These schemes rely on industry advice for much of the baseline information used in assessments. As a result, there is a close interaction between industry and government in the assessment of chemicals.

Industry organisations are also active in communicating the outcomes of assessment processes. For instance, the APMF provides regular advice on changes to the Dangerous Goods Code and the State and Federal drugs and poisons legislation. They also publish the *Guide for the Labelling of Isocyanate containing products*, the *Producers' Guides to the Australian Dangerous Goods Code*, the *Poisons Act and Regulations; Code of Practice for Use*, as well as a guide on the *Handling and Disposal of Epoxy Resins*.

5.3 Occupational health and safety—training

Industry bodies support activities aimed at improving occupational health and safety.

Initiatives in the agricultural sector include practical training aimed at reducing the incidence and cost of injuries on farms. Most of the initiatives concentrate on the usage of chemicals (for example, practical information on protective clothing). The National Farmers' Federation runs the National Farm Chemicals Users Course. The Chemical Industries training course provides accreditation to users of chemicals. The ag/vet chemical industry's (Avcare) training course, Agsafe, provides accreditation and training for all industry personnel so they can better advise farmers on safe use.

Industry organisations actively promote occupational health and safety. For instance, the APMF has as one of its objectives the efficient and safe work practices. As a result, the APMF and the paint industry union recently negotiated improvements in workplace practices. This was facilitated by a study of chemical exposure conducted by the National Occupational Health and Safety Commission in 1995. The APMF worked with the paint industry union and the Liquor, Hospitality and Miscellaneous Workers Union to prepare the industry's response to the findings of this study. Although the study indicated that exposure in the paint industry was within recommended levels, both unions and the APMF sought to improve workplace practices and improve workplace safety.

The Plastics and Chemicals Industry Association also has a public commitment to protect worker health. This is expressed as a commitment to provide training courses on the proper handling of chemicals, designed to educate the public and workers in the industry. These courses include:

- 30 training courses on ten chemical handling topics for 220 students;
- Responsible Care training and briefings to vocational students.

Union organisations are very active in occupational health and safety. The example above relating to the APMF's input to the work on chemicals and exposure illustrate this well. Unions are a major training provider and workplace representatives of the union provide constant occupational, health and safety monitoring.

Environmental groups are also called upon to advise on possible risks to chemical workers. They provide advice on chemicals that threaten the environment and they offer advice on alternative products. For example, the Toxin Action Group gives phone advice, provides chemical data sheets and publishes contact details. Its members attend public meetings and workshops and actively contribute suggestions. They are involved with all levels of government. Some of their members are frequent guest speakers at fora on chemical management and use.

5.4 Enforcement or stewardship activities

Environmental groups perform an ongoing 'watchdog' role in Australia. This role remains the traditional area of environment groups and in many instances it was the reason for their formation. In recent years their efforts have become increasingly sophisticated, with links to monitoring programs and community information programs. Exemplars include Greenpeace, which closely monitors a range of environmental issues and takes legal or campaign action when breaches are believed to have occurred, and the Total Environment Centre, which has exhibited a strong advocacy role for controls of chemicals usage.

On the local level, environment groups are also active. For instance, the Toxin Action Group (TAG) actively informs communities about new legislation and monitoring for breaches of environmental laws. TAG also acts as stewards, supporting management programs that go beyond legislation, for example, pesticide reduction programs and best management practice training. They also propose ways to reduce reliance on toxic chemicals.

Governments often encourage 'watchdog' activity, for example Roadside Monitoring by the NSW Environment Protection Agency encourages community members to report violations of their environment protection acts and other relevant Acts such as the *Threatened Species Act*, the *Pesticide Act* and the *Noxious Weeds Act*.

Industry organisations take on a range of stewardship programs in Australia. The most prominent example of this is the Responsible Care program managed by PACIA (see case study below). PACIA also have developed specific codes of practice for certain areas of chemicals management. These include:

- *Code of Conduct for the Control of Illicit Drugs and Illicit Drug Precursors*—a manual developed and adopted by law enforcement agencies throughout Australia as a guide to responsibilities of chemical manufactures.
- *Sodium Cyanide Emergency Response Manual*—a manual providing information to authorities responsible for emergency arrangements along transport corridors.
- *Toluene Diisocyanate (TDI) Emergency Response Manual*—TDI is a raw material used in manufacturing polyurethane foam. The manual gives advice on emergency procedures in the event of an incident. Regular exercises are held with emergency services.
- *Acrylonitrile Emergency Management Handbook*..
- *Code for the Use of Polyelectrolytes in NSW*—Polyelectrolytes are used for water treatment. This manual was developed by PACIA members and government authorities to publish standards for these substances.
- *Code of Practice for Hydrofluoric Acid*—a code providing advice and requirements for the supply chain of Hydrofluoric Acid in solution.
- *Reducing Waste*—annual waste surveys conducted since 1993.

The need to provide complete product stewardship for agricultural chemicals was recognised in the late 1980s by the agricultural chemicals industry (represented by Avcare, formerly known as AVCA), who introduced the Agsafe program, offering training and accreditation for retailers and resellers of agricultural products. The program has trained over 14,500 people (as at July 1998), and is recognised by pesticide users as being very useful in protecting human health and the environment.

The boundary between industry voluntary programs and legal enforcement is sometimes blurred, and governments are increasingly willing to formally endorse industry achievements. For instance, Agsafe has been authorised by the Australian Competition and Consumer Commission to impose sanctions on farm chemical retailers who do not comply with government regulations regarding storage and safe use. Another industry-based stewardship activity is the emerging trend towards the use of quality assurance to improve chemicals management. For example, where food produce (i.e., fresh vegetables) includes a chemicals management component (i.e., pesticides), some large supermarkets will only accept products from outlets with Quality Assurance programs. ISO 14000 is being increasingly adopted by Australian industry, and will have an influence over the development of industry programs.

Case Study

***Responsible Care* by the Plastic and Chemical Industry Association**

PACIA has introduced, and is actively promoting amongst its members, the *Responsible Care* program. This program has a unifying objective for ensuring that the activities of the chemical industry in Australia meet community expectations for protection of people and the environment, and that the industry is sustainable. This is an international chemicals industry program.

The aim of the program is to retain a long term *Licence to Operate* for the chemicals industry by reducing the risks associated with chemicals. It seeks to foster continuous improvement in industry health, safety and environmental performance. The program encourages an open dialogue with the community. It seeks to measure its performance by a reduction in injuries, incidents, and waste.

Companies who participate in the program have *Responsible Care* coordinators who oversee the implementation of codes of practice. Through regular meetings, site coordinators share successful experiences and explore ways of linking codes of practice with health, safety and environment programs already in place. Internal company auditors monitor compliance with the codes of practice. External verification of these company assessments is provided by verifiers drawn from Standards Australia, the National Association of Testing Authorities and Lloyds Register.

Within the first six years of operation, results from the program have been most encouraging: a 32 per cent decrease in employee lost time due to injuries and a 35 per cent fall in the frequency of transport incidents. 70 per cent of industry sites now have waste reduction plans covering the generation of greenhouse gases and the discharge of liquids into sewers and solids to landfills. 80 per cent have emergency response preparedness plans.

The value of the chemical industry's *Responsible Care* program is increasingly being recognised by regulatory authorities and surrounding communities.

Encouraged by the success of the program, PACIA is currently in the process of introducing a modified form of *Responsible Care* for the plastics industry called *Plascare*. This program is aimed more at manufacturers of plastics products, since most manufacturers of plastics monomers already subscribe to *Responsible Care*.

5.5 Management of waste and unwanted chemicals

Environmental organisations seek to encourage the minimisation and avoidance of waste chemicals. For example, Greenpeace actively researches environmentally sound ways to dispose of waste. They provide guidelines containing policy advice to governments and they give assistance to industry and the general public.

Industry organisations are becoming increasingly conscious of the environmental consequences of waste production. Waste control methods that follow the lifecycle of a product and make use of the product at all stages of production are being developed. For example, PACIA has as an industry goal for all companies to have effective waste management systems dealing with all lifecycle stages of waste.

Several principles are recommended by PACIA:

- Waste minimisation is to be practised in all phases of an operation.
- Waste re-use is preferred to treatment or disposal.
- Waste is to be handled, treated and disposed of in ways which protect human health and the environment.
- Managers are to cooperate with authorities in the assessment and remediation of previous landfill sites.

PACIA also seeks to manage waste issues beyond the factory door. For instance, PACIA support EcoRecycle in Victoria which undertakes free collection of household chemicals. Leaflets are distributed to householders about the chemicals that can be deposited at various collection sites. PACIA provide EcoRecycle with appropriately qualified and experience staff on the collection days.

Many other approaches to waste control are also taken. For example, the Australian Paint Manufacturers Federation has a number of special issue management groups, such as the Paint Waste and Recycling Committee, established to address problems associated with the disposal of unwanted paint and empty paint containers, particularly by householders. Possible solutions are being discussed with metal recyclers and waste disposal companies. The APMF also produces brochures on *Cleaning up After Painting* and *Getting Rid of Old Paint* (recently revised and reprinted).

The National Farmers' Federation (NFF) and Avcare are currently cooperating with the Commonwealth State and Territory governments a one-off, government-funded collection of unwanted and unused farm chemicals, in particular organochlorine pesticides. NFF and Avcare support the one-off collection and have offered in-kind support to

facilitate the collection and are negotiating a system to avoid any future build up of unwanted farm chemicals.

Other activities relating to unwanted chemicals are discussed in Chapter 4. Specifically, the functioning of the National Advisory Body (NAB) in relation to the management of unwanted organochlorine chemicals has seen a close and successful interaction between government and the community (see Section 4.2.3).

5.6 Sustainable chemistry and research into alternatives

Environmental organisations are increasingly promoting alternative solutions to environmental problems by advising consumers about alternatives to products that are environmentally harmful or detrimental to health. This activity is presenting industry with the challenge of finding new products or new ways to produce products that are increasingly less harmful to health and the environment.

Greenpeace studies alternatives to products that it considers to be harmful to the environment. For example, alternative flooring products such as linoleum, Indian coir carpets and rubber floor tiles are suggested by Greenpeace in their publication *Alternatives to PVC, Supplier's Guide*. The Total Environment Centre offers the public an advisory service on the effects of chemicals and suggests less harmful alternatives.

Smaller environment organisations are also involved in this activity. For example, the Toxin Action Group supports the adoption of alternative programs and products that will lead to improvements in chemical management. TAG was an early advocate of pesticide reduction programs for local governments (1980s) and have designed and initiated training projects for unemployed people in non-toxic weed control trials and management planning. TAG is actively helping local councils to design and implement policies for chemical management, public pre-notification and exemption practices. This cooperative effort has reduced conflict through community consultation and participation in planning and policy development. TAG supports cleaner production processes which lead to a more sustainable system of chemicals management. Lifecycle analysis is a comprehensive way for assessing the potentially adverse effects of chemical products.

Industry bodies are also searching for ways to avoid generating waste. Avcare and the NFF, in conjunction with the Australian Local Government Association, has developed the *Industry Waste Reduction Agreement*. The aim of the Agreement is to provide long-term, practical solutions to the management of clean, empty farm chemical containers and to reduce the quantity of waste packaging. Funding of the scheme is via a voluntary levy on crop-protection and animal health chemicals sold in non-returnable metal and plastic containers.

This project will be implemented through the chemical industry's Agsafe program and is designed to reduce packaging waste by the introduction of different packaging and by new formulation technologies. Proposed mechanisms include water-soluble packaging and distribution systems using refillable containers.

5.7 Monitoring and data collection programs

Monitoring and data collection programs have different meanings for various non-government organisations engaged in chemical management. For some groups it means going out on a regular basis and taking samples from a site; for others it is a matter of surveying their industry for information on best practice.

Industry organisations are heavily involved in chemicals monitoring (i.e., individual plants conduct monitoring programs of their emissions, the results of which are drawn on by industry, environment and government organisations). Originally, this related to the protection of workers, but in recent decades has been a response to the need to protect the community and environment as well. Such monitoring programs were usually begun at government instigation but more recently industry has advanced its own programs.

Industry organisations such as PACIA are active in promoting programs such as *Responsible Care*, which encourages individual facilities to focus on waste. Part of this includes the tracking and reporting of emissions. These waste surveys began in 1993 and gather information on the generation and release of chemicals. Annual reports are provided by PACIA to the community and present information on environmental impact under headings such as greenhouse, ozone depletion and photochemical smog. Though these surveys have been criticised by organisations such as Greenpeace for their incompleteness, they are nevertheless used by environment organisations to support their own work.

Environmental groups, such as Greenpeace, collate and assess environmental data in support of their policy development and environmental action campaigns. Such activities generally tend to be focused on specific issues and it is unclear to what extent they are sustained over time.

However, Greenpeace DEHs support a pollutant release inventory in Australia that relies on a variety of information sources, including industry organisations (specifically PACIA's waste survey) and government data. The Total Environment Centre disseminates chemicals data (including emissions and effects). The National Toxics Network also maintains a network of information on incidents and emissions.

Local environmental groups, such as Toxin Action Group, have a key role in the Australian chemical management infrastructure through their ability to conduct on-going monitoring and collection of data. Their members' location and local knowledge puts them in the perfect position to take regular samples of a particular area over an extended period of time.

The Toxin Action Group monitors the use of chemicals from a community perspective, receiving anecdotal accounts from individuals and landcare groups about use, misuse and problems associated with ag/vet chemicals. They also provide information and a supporting network (National Toxics Network), as well as advice and a newsletter update. Occasionally they conduct surveys and request feedback from members and the general public.

The importance of such local activities has been recognised by government as demonstrated by the case study below.

Case Study Listening to the Land

Many community groups are involved in monitoring their local environment. Some are concerned with chemical pollutants and their effects, others in more generic issues such as water quality. The government recognises these groups and encourages their activities by providing advice and information.

One example of this is the directory of community environmental monitoring groups in Australia entitled, *Listening to the Land*. This directory provides valuable information on the various regional groups around Australia who are involved in this important role. It is intended as a networking tool to help those starting afresh to learn from the experience of established groups and programs and to link the efforts of volunteers to scientists, managers and policy makers.

A second example is *Waterwatch*. Under this program government engages local community organisations, such as schools, and advises them about consistent monitoring procedures. As an arid continent, Australia's inland rivers have been adversely affected by the use of chemicals (specifically nitrogen and phosphate). In response to this situation, *Waterwatch* establishes an Australia-wide network of river monitoring.

5.8 Informing the community

Environmental protection groups actively seek to inform the community about the effects of chemicals on health and the environment. Their high media profile puts them in a good position to highlight issues deserving public attention. Over recent years, Greenpeace International has issued a range of campaign documents and publications in mainstream journals

about problems such as toxic trade and site contamination (for example, the Sydney Olympic site). The Total Environment Centre has established a chemical advice service that offers advice to the public on chemicals that affect their health and which suggests less harmful alternatives. They also operate a library service and bookshop.

Other organisations, such as the National Toxics Network, serve as information clearing houses for smaller, less well financed action groups. Many NGOs report an increasing, and sometimes overwhelming, demand for information about certain incidents or the effects of chemicals.

The National Toxics Network conducts much of its day-to-day communication via e-mail and the Internet (refer to Chapter 6 for the importance of this growing medium of communication). NTN uses the information gathered through its network to support the use of geographic information systems, which can be used to create graphic images of contaminated sites. NTN has found that this technology fosters rapid public understanding of the threats posed by toxic sites to the health of waterways, soil, wildlife and humans and it prompts responses by residence and regulators.

Local community groups (e.g., local landcare groups) play an important role in informing the community about issues related to toxic chemicals including the regulation, use and management of chemicals. For example, TAG campaigns in the local and regional media whenever an issue arises that requires such involvement. They also offer advice to the Environmental Education Committee of the NSW Environment Protection Agency regarding priorities or education campaigns on chemicals management. Australian environmental NGOs such as Hazardous Materials Action Group (HAZMAG) and the National Toxics Network have produced a wide range of information bulletins, campaign materials, books and other publications.

These publications are used by community groups, universities and solicitors, as well as local, regional, State and Federal governments for educational planning, and regulatory purposes. The National Toxics Network has produced software, electronic maps, chemical databases and fact sheets and issues papers. The Network is interested in working with other national groups to establish standard monitoring methods and a national graphical information system in order to network with local and regional groups in Australia.

Industry organisations have increasingly concentrated on informing the community about chemicals. In recent years, effort has focused on *safe use* information campaigns with, for example, the National Farmer Federation supporting voluntary educational programs for improving the management of chemicals on farms. PACIA conducts a range of training courses designed to educate the public, an example of which is

their Chemicals Handling, Storage and Transport course. Details of PACIA's courses can be found on the Internet (Appendix 5).

Industry also attempts to understand community attitudes. Both PACIA and AVCARE have commissioned attitude surveys in recent years. Another aspect of industry activity has been a greater openness with local communities, for example, through companies holding open days for their local community and by setting up community liaison groups.

Informing the community takes place in many ways and for a variety of reasons, from occupational health and safety, to industries who want to promote their particular environmental strategies, and to regional groups who are concerned about local environmental issues (for example; pollution in local waterways).

5.9 Summary of activity outside government

The broad range and diversity of non-government activity and interests related to chemicals management is summarised in Table 5-1.

Table 5-1: Summary of activities by organisations outside government

Activity	Industry Organisations	Environment & Green Consumer Organisations	Trade Unions
Assessment of Chemicals	Use and review reports and provide data inputs	Use and review reports and provide data inputs	Advise on policy issues regarding use
Monitoring and Data Collection	Annual surveys	Actively circulate available information	
Informing the Community	Promotions of <i>responsible care</i> Publications	Campaign materials, books	Information
Sustainable Chemistry or Research into Alternatives	Active interest in potential substitutes	Active promotion usually drawn from overseas	
Enforcement or Stewardship Activity	Accreditation, Container collection schemes etc.	Legal actions, Media attention	Workplace Negotiations
Occupational Health and Safety/ Training	Pursuit of consistent information and education practices		Worker education programs
Management of Waste/Unwanted Chemicals	Actively seek to monitor and reduce	Actively seek to monitor and reduce	

5.10 Interaction between government and NGOs

In recent years, interaction between government and NGOs on chemical management issues has increased for two main reasons:

- Public and media awareness of environmental and public health issues has grown considerably: The environment, in particular, is now a mainstream issue in political debate and the media at all levels, national, state and local. There is increased local interest in community-based action that protects environmental values and human health. This is also expressed through increased representation of green issues by members of parliament.
- A trend in legislation towards outcome-based regulation with governments setting and enforcing goals or standards while allowing the responsible party to determine how it will achieve the goal or standard. This has led to greater interaction between NGOs and government, with the adequacy or acceptability of the goals and the appropriateness of methods used to attain these goals common areas of discussion.

This has resulted in increased consultation between NGOs and governments. However, even while seeking more access to government processes, NGOs remain cautious about governments' commitment to consultation. Environment NGOs see a current division between consultative processes and those processes used to make decisions (such processes are explored in Chapter 4). While not suggesting that the independence of government decision-making processes should be compromised, environment NGOs would prefer more transparent processes, with clearer links established between consultation and decision-making. Industry NGOs would support this sentiment but also seek to improve the efficiency of government infrastructure relating to chemicals management.

5.11 Priority concerns for chemicals management

Part of the guidelines provided by UNITAR seek to establish priority concerns for chemicals management (suggested by the Guidelines as forming Chapter 3 of any National Profile). This is a complex matter, as different individuals, groups, industries and levels of government might identify different issues depending on their particular perspectives.

Attempts to survey attitudes to chemicals management have been made in Australia. For instance, the Plastics and Chemicals Industries Association (PACIA) commissioned attitude surveys in 1994 and 1996 to monitor public opinion on their industry. Previous surveys, addressing the chemicals industry and plastics industry separately, were completed

in 1988 and 1992. In addition, more general surveys of public opinion about environmental issues are available, and these contain findings relevant to chemicals management. Examples of this are the documented summary of stakeholder views which resulted from NEPC consultative processes and the analysis of domestic pressures for change discussed in the *Management of Agricultural and Veterinary Chemicals: a National Strategy*.

This National Profile identifies priority concerns in a number of ways:

- Chapters 3 and 4, dealing with government organisations and coordination, address priority concerns of government during the last 10 years. These have included the improvement of the efficacy and efficiency of chemicals assessment and registration. This concern has resulted in a wide range of legislative and organisational activity. Governments have also been active in waste minimisation, seeking to simultaneously reduce waste and establish baseline data.
- This Chapter provides an insight into the priorities of NGOs, which are as diverse as the organisations themselves. These priorities are not easily summarised but an attempt has been made in this Chapter.
- Another way of identifying priority concerns was a survey commissioned in support of this Profile. The survey focussed on key stakeholders in the chemicals management infrastructure. The outcomes of this survey are provided at Appendix 4 and briefly introduced below.

The key informant's study was undertaken to augment these other studies and provide the National Coordinating Team for the National Profile with a reasonably current overview of priority concerns relating to chemicals management. These priority concern, in order of priority, are:

- hazardous waste treatment and disposal;
- storage and disposal of obsolete chemicals;
- pollution of inland waterways;
- occupational health—agriculture;
- chemical accidents during transport;
- chemical residues in food;
- air pollution;
- soil contamination;
- groundwater contamination;
- drinking water contamination;
- chemical storage—accidents and leaks;
- chemicals imports—unknown formulations;
- occupational health—industry;

- chemical poisoning and suicides;
- wildlife contamination.

With regard to 'level of concern', in general there is consistency between experts' emphasis on problems and public attitudes as expressed through recent industry surveys. For example, the experts' focus on hazardous waste disposal is echoed by high public concern expressed about the disposal of chemical waste (Open Mind Research Group, 1996) An exception to this is that soil contamination has been given significant emphasis by expert informants, particularly those representing governments, whereas public attitude surveys have given little attention to this issue. This may of course reflect the questions posed in the different studies.

The National Profile thus provides a number of perspectives on priority concerns, with Chapters 3 and 4 outlining government interests, Appendix 4 surveying concerns of stakeholders, and this Chapter summarising NGO interests and activities.

5.12 Summary

As this Chapter has shown, the roles of non-government organisations in Australia's chemical management infrastructure are many and varied. NGOs include managers, educators, policy developers and reformers. They supply government with valuable data for addressing discrete issues such as problems with specific chemicals, or generic issues such as sustainable chemistry.

From local groups at the grass roots level who monitor their local environment, to the various industry bodies who support their members concerns and reform their industries from within, Australia's chemical management infrastructure is able to draw on many different inputs while developing future Australian policy.

6

Chapter

ACCESS TO NATIONAL CHEMICALS MANAGEMENT INFORMATION

This Chapter is an overview of national information available about chemicals management and the management infrastructure. Availability of information in relation to non-government organisations is discussed in Chapter 5.

6.1 Information on chemicals management

Availability of information about chemicals management reflects the administrative and legislative arrangements outlined in Chapters 3 and 4.

Most chemicals management activities in Australia depend on the flow of information from various functional agencies responsible for assessment to those responsible for control of use. As Chapters 3 and 4 have demonstrated, this aspect has been the focus of considerable activity in recent years. In addition, the activities of non-government organisations (Chapter 5) also means that information being generated often becomes widely available. For instance, NICNAS and NRA make reports of their chemical assessments and registrations available to the public.

However, other information (besides assessment and advisory information) is less accessible. In particular, Chapter 2 has noted that Australia, at least in terms of the general public, possesses a less than complete picture of waste and pollution generation and specific statistics on production and usage (section 6.3). It is important to note that while such information may often be collected for specific purposes, it is not generally available in a nationally uniform, consistent and comparable fashion. As the focus of this chapter is on *accessible* national data, it will not discuss the potentially large range of data, which is either not made available (for instance; constrained by confidentiality requirements), collected in an irregular and unreliable manner, or only limited to specific geographical areas or times.

6.2 Summary of available national information

Available information is summarised in Table 6–1. Contact details for various organisations and pertinent Internet addresses have been listed in Appendix 5.

Table 6–1 reveals that information becomes generally less available (or generated less consistently) the further a chemical is along its lifecycle. Information on the assessment of a chemical is widely available as is advice on appropriate usage, labelling and accident preparedness. Such information is generally available to workers with relevant government agencies, trade unions and industry disseminating the information.

Although this information is publicly available, the public is often more interested in the use, movement, storage and emissions of hazardous chemicals. This kind of information is not available on a comprehensive, nationally available basis in Australia. The information that DEHs exist is often protected by commercial-in-confidence restrictions, can be difficult

to obtain or is limited to particular areas. These constraints have been recognised by governments (section 6.3).

Table 6–1: Available information

Information on	Industrial Chemicals	Ag/Vet Chemicals	Other
Information on assessment	NICNAS makes available public assessment reports that may contain recommendations	NRA make available public reports of their registrations	Govt. and NGOs make available overseas and other assessment information
Information on safe use	NOHSC may specify minimum requirements for use and will provide advice on use etc.	Registration includes conditions of use and is widely disseminated via the label	Industry produces MSDSs. Poisons scheduling advises toxicity and SUSDP provides safety statements
Classification and labelling	A range of minimum standards ensures that hazardous substances are appropriately labelled	Registration includes specification of label	Industry labels products appropriately
Accident preparedness and response	Material Safety Data Sheets and labels include advice of actions in event of accident. HAZCHEM labels are applied as necessary	See industrials	NOHSC specify necessary activities for major hazard facilities
Production statistics	Limited availability	Limited availability	Provided by industry on request, though detailed retail sales or company/ chemical specific data is usually considered commercial-in-confidence
Information on quantities used by location	Limited availability However, note that assessments conducted identify expected use, risk to public health etc.	Limited information Note that registration controls conditions of use	Industries conduct regular liaison with communities on chemicals use. Many communities actively monitor use.
Poisoning control	Labelling of products	Labelling of products	Labelling of products and Poisons Centre—provides national advice through telephones
Information of the release of chemicals	National Pollutant Inventory. First data available 2000	Very limited	Several community and industry emissions inventories of limited coverage
Information of the presence of chemicals in the environment	Limited availability	Limited availability, though sampling of residues in food.	Several community groups actively seek such information
Information on the presence of residues in food	Not Applicable	National Residue by Bureau Resource Science and Market Basket Survey by ANZFA	Information on Contaminants in Food
Information for workers	Yes—OH&S, Information on safe use is provided on the label	Yes—OH&S, Information on safe use is provided on the label	Yes—OH&S, and the SUSDP also advises safe handling

Increasingly, community organisations, individual facilities and industry associations are explaining the usage and emission characteristics of chemicals. These topics have been explored in Chapter 5.

6.3 Supporting activity

Table 6–1 summarised the scope of information available in Australia. This section outlines activities supporting this database: data collection, dissemination and management.

6.3.1 Collection and dissemination

The Australian Bureau of Statistics (ABS) is responsible for collecting national data about most national activities. However, much of this information is of limited use for chemicals management because the ABS is constitutionally prohibited from releasing details that identify individuals or companies, whereas chemicals management is often concerned with the minute detail of specific effects and activities.

This means that chemicals management information is mostly disseminated through other networks. These networks, mostly outlined in Chapters 3 and 4, effectively communicate information relating to the assessment, registration, safe use and proper handling of chemicals.

6.3.2 New initiatives

In recognition of the limitations of information currently available on chemicals use, emissions and waste, governments have taken actions to improve information availability.

Chemical use

Chemicals usage information is difficult to collect. However, information on the sale of chemicals can serve as an approximation of usage, and sales information is widely collected and collated by industry as part of its marketing and accounting procedures. Such information, though, is highly sensitive as it relates to the relative performance of individual companies, and as such has been treated as commercial-in-confidence.

However, both industry and governments have begun to make aggregated sales information available (section 2.4). In addition, the Ministerial Councils for the environment and agriculture have established a joint working party to examine the issue of collection and dissemination of baseline use information on ag/vet chemicals.

Chemical emissions and waste

Available information on the generation of chemicals wastes is discussed in Chapter 2 (notably the Victorian TRANSCERPT database). However, as

noted in Chapter 2, information on the generation of chemical wastes in Australia is currently limited but should be substantially improved with:

- Australian Waste Database;
- National Pollutant Inventory;
- new regulations on the movement of controlled waste between states and territories.

The Australian Waste Database is an initiative that focuses on the generation and disposal of waste, most of which is from domestic sources and destined for landfills, but a proportion of this waste is classified as hazardous chemical waste (e.g., organic solvents). The Australian Waste Database is now being implemented progressively across Australia.

The National Pollutant Inventory (NPI) is a register of pollutant release and transfers that will collect data on emissions of listed chemicals from both point sources (industrial) and diffuse sources (motor vehicles). Transfers of waste are not included in the scope of the NPI. Data will be publicly available after January 2000.

The Movement of Controlled Waste Environment Protection Measure (a regulation which will provide for the consistent national approach to dealing with the movement of controlled waste) will gather data, amongst other activities, on the movement of controlled waste between States and Territories.

In addition to these programs, which generate information on internal waste-related activities, Australia actively regulates the import and export of hazardous waste (section 3.7.4) and provides for the control of ozone-depleting chemicals. Information on exports and imports of chemical and hazardous wastes is not generally easy to collate because of the way that Customs Commodity Codes are arranged. However, records of permits granted for the export and import of hazardous wastes, and the wastes that are shipped under these permits, are kept by Environment Australia as part of its responsibility for implementing the Basel Convention.

6.3.3 Information management

Another area of reform, which has affected the availability of chemicals management information, is the Australian approach to information management, including the standardisation of information collections.

Australia has been a leader in standardising the collection of information, and the provision of that information through the Internet. With an estimated 20 percent of the Australian population having access, the Internet is becoming a very effective tool for providing access to information.

With increasing standardisation achieved through initiatives such as the Australian Spatial Data Infrastructure and the Australian Government Locator Service, governments are developing distributed databases which are linked in real time through the Internet.

Technology is also enabling map-based searching through the Internet, which was previously available only through complex geographic information software. These technologies are being applied in various ways to provide users with access to information on pollutants, environmental impact assessment and sustainable industry.

Much of the activity set out in section 6.3.2 on chemical wastes has reflected this trend, in that activities have concentrated on putting in place standard collection procedures and making the information available over the Internet.

The uses of the Internet in making information available are illustrated in the case study below.

Case Study EnviroNET

EnviroNET Australia is a network of databases available through the Internet that is designed to improve access to environment information. EnviroNET is maintained by Environmental Australia. The network serves the environment protection needs of the community at different levels: education, research and development, environment technologies, and industry expertise.

Through a specially designed network of databases and directories, EnviroNET links people with problems in Australia or overseas to Australian solutions. This network provides information on industry expertise, environmental education, research & development, cleaner production, environmental technologies and hazardous wastes.

Since its launch in December 1995, EnviroNET has generated world-wide interest from governments, business, industry, and scientific and academic organisations.

The site has received two major awards:

- Finalist—AFR/Telstra Internet Awards, Industry Category;
- Best International Environment Management site by Eco-Network at the Royal Institute of Technology, Stockholm.

6.4 Availability of international information

International literature is readily available through libraries in the major cities and through the Internet. As outlined in section 6.3.3, the increasing use of the Internet means that most citizens can quickly access international data on chemicals management. Most government agencies in Australia

concentrate on placing their own information on the Internet and provide links to other useful international sites. Appendix 5 sets out a wide range of useful web sites. The Internet is augmented by a variety of other mechanisms including those listed in Table 6–2.

Table 6–2: Examples of available international literature

Literature	Locations	Who has access	How to gain access
Environmental health criteria documents	Department of Health; NOHSC & university libraries such as the University of New South Wales	Public	Free
Principles of good manufacturing practice	National Registration Authority and Therapeutic Goods Admin.	Public	Free
Health and safety guides (WHO)	Department of Health NOHSC	Public	Free
International chemical safety data cards (IPCS/EC)	Department of Health NOHSC	Public	Free
Decision guidance documents for PIC chemicals (FAO/UNEP)	Environment Australia	Public	Free
FAO/WHO Pesticides Safety Data Sheets	National Registration Authority; Department of Health	Public	Free
FAO/WHO joint document on pesticide residues	National Registration Authority Department of Health	Public	Free
Material safety data sheets (industry)	Large chemical suppliers; NOHSC; Internet sources	Public	Free
OECD guidelines for the testing of chemicals	Department of Health NOHSC	Public	Free
Principles of good laboratory practice	Department of Health NOHSC	Public	Free
Principles of good manufacturing practice	National Registration Authority; NOHSC	Available	On request
WHO/UNEP global environmental library network	Environment Australia	Available	On request
International Council of Chemical Associations	PACIA	Available	On request
World Chlorine Council	PACIA	Available	On request
International Forum on Chemical Safety literature	Environment Australia	Available	On request
CICADS (IFCS)	NOHSC	Public	Free
SIDS	NOHSC	Available	On request
International Council for Metals and the Environment	Minerals Council of Australia	Available	On request

In addition to literature and the Internet, the Australian government chemical management infrastructure has access to a wide variety of international databases. These are generally available to the public on request. Table 6–3 lists examples of the databases available.

Table 6–3: Examples of available international databases

Database	Locations	Who has access	How to gain access
IRPTC (International Register of Potentially Toxic Chemicals)	NOHSC	Public	On request
EUCLID (non-confidential)	NOHSC	Available	On request
CAS (Chemical Abstracts Services)	University libraries, e.g., University of New South Wales	Public (latest five years)	Free
OECD—Pesticides Reviews	National Registration Authority	Available	On request
GINC (Global Information Network on Chemicals—pilot)	NOHSC	Library service	Chargeable
Codex Alimentarius—International MRLs	Internet (FAO) (ANZFA)	Public	Free
STN (Scientific and Technical Information Network)	University libraries, e.g., University of New South Wales	Library service	Chargeable

Chapter

7

TECHNICAL INFRASTRUCTURE

This chapter provides a brief overview of the technical infrastructure for chemicals management in Australia. It also discusses research and training institutions not addressed in Chapter 5.

7.1 Introduction

Australia has a well-developed technical infrastructure for chemicals management. This includes programs of research and development conducted by various national and state organisations. Such programmes are found in the universities, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Cooperative Research Centres (CRCs) and primary industry Research and Development Corporations (RDCs).

The most wide-spread group of test facilities are the organisations accredited by the National Association of Testing Authorities, Australia (NATA), described in section 7.2.1.

7.2 Overview of laboratory infrastructure

Australia has developed a comprehensive laboratory infrastructure whose practices are among the world's best. At the end of June 1997, the Annual Directory of the National Association of Testing Laboratories lists 2473 laboratories holding accreditation for some aspect of laboratory testing, sampling, measurement, inspection and calibration. Of these, a significant number are involved in work classified as environmental testing.

Analytical laboratories used for quality testing in the manufacturing process of veterinary chemicals are licensed by the NRA and assessed for compliance with relevant codes of good manufacturing process (GMP) and good laboratory process (GLP). NATA accreditation for relevant testing procedures is usually accepted as evidence of compliance. Likewise TGA licences laboratories involved in the manufacture of human pharmaceuticals and assesses them for compliance with the relevant GMP/GLP code.

7.2.1 National Association of Testing Authorities, Australia (NATA)

NATA was created by the Australia Government in 1947 to provide a system of national laboratory accreditation. Today, NATA provides an independent assessment and accreditation for facilities involved in testing, measurement, calibration and inspection throughout Australia and more recently, laboratories in the Asia/Pacific region have also been accredited by NATA.

NATA provides a number of services:

- *Laboratory Accreditation*—having established criteria for good laboratory practice and technical competence (based on ISO Guide 25), NATA assesses applicant laboratories for specific technical

competence and adherence to NATA criteria. This is regularly checked and is supplemented by proficiency testing programs.

- *Personnel Certification*—similarly, NATA evaluates and certifies an individual's competence in subjects such as field testing and sampling.
- *Quality Systems Certification*—NCS International (a fully-owned subsidiary of NATA) is a recognised third party certifier (AS/NZS ISO 9001, 9002 etc.).
- *Training and Information Services*—NATA offers comprehensive laboratory training supporting its accreditation services.
- *Q-Base Certification*—NATA is able to certify quality management systems of small businesses by applying the New Zealand Telarc system.

Through these measures, NATA is able to comprehensively underwrite Australia's laboratory infrastructure.

7.2.2 Good Laboratory Practice

NATA is also responsible for monitoring Australia's compliance with the OECD principles for Good Laboratory Practice (GLP). Compliance with GLP is currently not mandatory in Australia, only voluntary. Testing facilities have sought NATA accreditation for GLP compliance on this voluntary basis.

7.3 Overview of research infrastructure

Research infrastructure includes the Commonwealth Scientific and Industrial Research Organisation (CSIRO), universities, chemical manufacturers, co-operative research organisations and professional societies or institutes. In addition, a recent report, *Management of Agricultural and Veterinary Chemicals: a National Strategy 1998*, identified a range of organisations responsible for research in that area and this is discussed in Appendix 3.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

CSIRO is the Commonwealth government's major scientific research organisation and is one of the world's largest and most diverse scientific research institutions. Its interests cover a range of areas of economic, environmental and social value to the nation including agribusiness, environment and natural resources, information technology, infrastructure and services, minerals and energy, and manufacturing.

For the chemicals and plastics industry, CSIRO conducts research to develop more efficient, economic and environmentally friendly products and processes including: biological and chemical crop protection

products; polymers and composites; specialty chemicals; advanced packaging materials; membranes; clean chemical processing; waste disposal; water and sewage treatment processes; and environmental monitoring equipment. The Organisation has a facility which allows transformation of laboratory scale chemical processes to prototypes and pilot plants. CSIRO's chemical and biological expertise is also applied to the pharmaceutical and health industry where its research portfolio covers; antivirals, cancer, cardiovascular disease, diabetes, tissue growth and repair, generic approaches to drug discovery, diagnostics and biomaterials.

CSIRO also undertakes research in environmental chemistry and ecotoxicology to assess the impacts of chemicals in the terrestrial and aquatic environment. In addition, CSIRO carries out toxicity testing for the chemicals industry as part of NICNAS requirements for chemical registration in Australia.

Co-operative Research Centres (CRCs)

Research is also undertaken by Co-operative Research Centres (CRCs) and Research and Development Corporations (RDCs), which have been established as joint initiatives by government and industry.

Primary industry RDCs undertake research funded by specific industries through levies and matching funds from the Commonwealth government. RDCs have been established to conduct research by the following industries: cotton, dairy, dried fruits, egg, fisheries, grains, grapes and wine, honeybees, horticulture, land and water resources, meat, pigs, sugar, tobacco, wool, and forest and wood products.

Professional Societies and Institutes

Australia supports a range of professional societies and institutes which act to qualify their members, accredit courses, and develop or preserve much of the technical knowledge base. Relevant Societies include:

- The Royal Australian Chemical Institute;
- The Institution of Engineers, Australia—Chemical Engineering College; and
- The Institute of Chemicals Engineers (based in the United Kingdom but active in Australia).

Relevant societies are frequently involved in matters related to research as well as the safe use of chemicals. For example, the Royal Australian Chemical Institute appointed the panel which produced, in 1993, the survey entitled *Chemistry: a Vision for Australia* for the Australian Research Council.

7.4 Overview of technical training and education programs

Australia possesses a comprehensive range of training and education programs directed at chemicals management. These programs focus on a range of disciplines: chemistry, engineering, environmental science, toxicology, health, law and technical management.

Technical education is conducted in Australia by Technical and Further Education colleges (TAFE) and universities. TAFE colleges run a range of vocational and technical courses such as certificate courses in chemistry and safety management. Many, if not all, Australian universities run undergraduate courses in disciplines such as chemistry, environmental science and health sciences, which provide initial tertiary training for a professional wishing to specialise in chemicals management. Some tertiary institutions run postgraduate courses in more advanced topics, such as environmental management, toxicology or occupational health and safety.

NATA offers training and certification programs (see 7.2.1).

Governments, industry associations and unions also support relevant training programs, for example the National Farmers Federation sponsors national farm chemical user training programs whereas governments offer Licensed Pest Control Operators courses for aerial agricultural operators and pilots.

7.5 Comments

As with all areas associated with Australia's chemicals management, the technical infrastructure is subject to ongoing review and appraisal by governments and industry.

An emerging trend is the increasing frequency with which community organisations are seeking independent testing of chemicals in the environment. This is a costly exercise for community organisations but demonstrates the increasing interest being taken by community organisations in chemicals management issues.

8

Chapter

INTERNATIONAL LINKAGES

This Chapter provides a brief overview of Australia's involvement in international fora which impact on chemicals management.

8.1 Cooperation and involvement with international organisations, bodies and agreements

Australia is an active participant in a range of international organisations, bodies and agreements directed at the management of chemicals.

It is important to note that Australia brings a whole-of-government position to its participation in international organisations, bodies and agreements. The development of the position is coordinated at the national working level through Commonwealth fora such as the Chemicals Clearing House and the Treaties Inter-departmental Committee. These discussions are followed by development of position papers and briefings through an inter-agency process which includes consideration established positions and seeking the direction of the relevant Minister or Ministers. One government agency usually serves as the focal point for specific international organisations or agreements (Table 8–1). Participation in international processes is augmented by regular consultations with non-government organisations. This usually includes seeking views on particular issues prior to developing an Australian position and then offering feedback to interested parties.

Table 8–1 summarises Australia’s involvement with international organisations and Table 8–2 provides a similar overview for international agreements.

Table 8–1: Involvement with international organisations and bodies

International organisation or body	National focal point	Other agencies involved	Related national activities
Intergovernmental Forum on Chemical Safety (IFCS) International Programme for the Sound Management of Chemicals (IOMC)	Assistant Secretary, Chemicals and the Environment Branch, Environment Australia ph: 612 6274 1499 fax: 612 6274 1230	Department of Foreign Affairs and Trade, Department of Industry Science and Tourism, Department of Agriculture, Fisheries and Forestry, National Registration Authority, NOHSC, Department of Health and Aged Care	Australia has a strong chemicals safety focus, (see Chapters 3 to 5), is active in the IFCS and also its inter- sessional groups and the Forum Standing Committee
United Nations Environment Protection (UNEP): IRPTC: Chemicals National Correspondent UNEP: Negotiations to establish a Persistent Organic Pollutants convention	Chemicals and the Environment Branch, Environment Australia (Industrial Chemicals) ph: 612 6274 1036 fax: 612 6274 1230 Department of Agriculture Forests and Fisheries (Pesticides) ph: 612 6272 3933 Department of Foreign Affairs and Trade (POPs negotiations) ph: 612 6261 9111 fax: 612 6261 2594	Department of Foreign Affairs and Trade, Department of Industry Science and Tourism, Department of Agriculture, Fisheries and Forestry, National Registration Authority, NOHSC, Department of Health and Aged Care	Australia participates in a range of UNEP Chemicals programmes. The existing PIC voluntary procedure. Australia is participating in negotiations to draft a Persistent Organic Pollutants Convention
UNEP: Cleaner Production	Director, Sustainable Industries and Community Section, Environment Australia fax: 612 6274 1230		Australia is actively involved in promoting cleaner production initiatives
Organisation for Economic Cooperation and Development (OECD) —Environment Directorate— Environment Health and Safety programme (chemicals group)	Assistant Secretary Chemicals and the Environment Branch, Environment Australia ph: 612 6274 1499 fax: 612 6274 1230	Department of Foreign Affairs and Trade, NOHSC, Department of Agriculture, Fisheries and Forestry, Department of Health and Aged Care, National Registration Authority, Department of Industry Science and Tourism	Australia has a strong chemicals safety focus, (see Chapters 3 to 5) and is active in the OECD's initiatives on risk management
International Program of Chemical Safety (IPCS) (Joint program of WHO, UNEP and ILO)	Department of Health and Aged Care NOHSC	Department of Foreign Affairs and Trade, Department of Industry Science and Tourism, Department of Agriculture, Fisheries and Forestry, National Registration Authority, Environment Australia	National chemical hazard evaluation (See Chapter 3)

International organisation or body	National focal point	Other agencies involved	Related national activities
World Health Organisation (WHO)	Department of Health and Aged Care	Department of Foreign Affairs and Trade, Department of Industry Science and Tourism, Department of Agriculture, Fisheries and Forestry, National Registration Authority, NOHSC, Environment Australia	See section 3.4
Food and Agricultural Organisation (FAO)	Department of Agriculture, Fisheries and Forestry	Department of Foreign Affairs and Trade, NOHSC	See Appendix 3
Codex Alimentarius Commission Committee (FAO/WHO)—Pesticides residues Residues of Vet Drugs in Food Food Additives and Contaminates Codes Alimentarius Commission Committee on Methods of Analysis	Department of Agriculture, Fisheries and Forestry Australian Quarantine Inspection Service Australia New Zealand Food Authority Australian Government Analytical Laboratories	National Registration Authority, Department of Health and Aged Care	See section 3.4
ILO	Department of Employment, Workplace Relations and Small Business	Department of Foreign Affairs and Trade, Department of Industry Science and Tourism, Department of Agriculture, Fisheries and Forestry, National Registration Authority, NOHSC, Environment Australia, Department of Health and Aged Care	Regarding OH&S, see NOHSC—Appendix 2
United Nations: Dangerous Goods Codes	Department of Transport	NOHSC, Department of Health and Aged Care	See section 3.7
South Pacific Region Environment Program (SPREP)	AUSAID Environment Australia	Department of Foreign Affairs and Trade, Department of Agriculture, Fisheries and Forestry	Australia supports a range of activities in SPREP. e.g., Australia has resourced SPREP to undertake some National Profile activities
World Bank, Regional Development Bank Regional Economic Commissions	AUSAID	Department of Foreign Affairs and Trade, NOHSC, DHAC, Department of Agriculture, Fisheries and Forestry, Environment Australia, National Registration Authority	See section 8.2

Table 8–2: Involvement in international agreements

International Agreements	Responsible Agency	National Implementation
Agenda 21—Commissions for Sustainable Development	Environment Australia	Endorsement of the National Strategy for ESD in 1992 by all jurisdictions which sets out implementation of agenda 21 principles. Provision of Local Agenda 21 activities with over 15% of local councils involved. Completion of National Profile. Specific input into Chapter 19's identified areas for action, through IFCS
UNEP: Interim Prior Informed Consent Procedure	Designation National Authorities: Industrial and Consumer Chemicals—Environment Australia, Pesticides—Department of Primary Industry and Energy	Activity under way Inventory of banned or severely restricted pesticides completed and inventory of banned or severely restricted industrial chemicals commenced Australia was an active participant in the completed negotiations to establish a legally binding treaty on Prior Informed Consent
Montreal Protocol in Ozone Depleting Substances	Environment Australia	Implementation across all jurisdictions, see Appendix 1 for range of ozone protection legislation
ILO Convention 170	Department of Employment, Workplace Relations and Small Business	Australia has yet to ratify this Convention
UN Recommendation for the Transport of Dangerous Goods	Department of Transport	Implementation across all jurisdictions, see section 3.7.3 and Appendix 1 for range of relevant legislation
Basel Convention on trade in Hazardous Wastes	Environment Australia	Hazardous Waste Act 1989
London Convention	Environment Australia	Environment Protection (Sea Dumping) Act 1982, which controls the dumping of wastes into the sea through a system of permits and licences; provides for a regime of offences and penalties for unauthorised or excessive dumping
Chemicals Weapons Convention	Department of Foreign Affairs and Trade	Chemicals Weapons (Prohibition) Act 1994: Provides Australia's response to the Convention on the Prohibition of the Development, Production, Stockpiling and use of chemical weapons and their destruction. Scheduled list of toxic chemicals and their precursors
Selected Regional, Agreements	1986 Noumea 1995 Port Moresby—Waigani Convention	Prevention of Pollution by dumping, and co-operation in combating pollution emergencies. Regional convention of hazardous and radioactive wastes.
Bilateral Agreements	Many and various particularly with New Zealand, Papua New Guinea	Includes in some cases mutual recognition of Standards and Accreditation Note the degree of involvement with the Australia New Zealand Ministerial Councils discussed in Chapter 4

8.2 Participation in assistance projects

Australia's development co-operation policy aims mainly at reducing poverty through sustainable development. The 1998 OECD Environmental Performance Review of Australia identified that Australia's total official development assistance (ODA) in 1996/97 was A\$1.45 billion or 0.29 per cent of GNP. Some 75 per cent of ODA is bilateral, the main recipients in 1996/97 being Papua New Guinea (31 per cent), other South Pacific countries (12 per cent) and Indonesia (10 per cent).

Australia has been increasing its ODA committed to environment protection in recent years (from A\$120 million in 1992/93 to A\$180 million in 1995/96). Some of these funds flow to projects which are particularly relevant to chemicals management infrastructure. Table 8-3 set outs some examples of such projects.

Table 8-3: Examples of projects assisting development of chemicals management infrastructure

Name of Project	Summary	Contact
Environmental Laboratories Project—Indonesia., (1998)	The project is for the provision of scientific laboratory equipment and training to upgrade 21 existing laboratories in 13 regions of Indonesia. The total cost is A\$34.28 million with Australia contributing A\$12.0 million	Director, Infrastructure and Environment Group AUSAID Fax: 612 6206 4870
Pacific Waste Management POPs Phase 1, (1998)	Involving 13 Pacific Island countries, the project will seek to improve the regional capacity to manage persistent organic pollutants. Australia is contributing A\$1.0 million to phase 1	Director, Infrastructure and Environment Group, AUSAID Fax: 612 6206 4870
Establishment of regional centre for Basel Convention, (1997)	Australia is supporting the establishment of a regional centre in Beijing for the Asia-Pacific Region to follow-up activity relevant to the Basel Convention	Director, Hazardous Waste Section, Environment Australia Fax: 612 6274 1230
UNEP—POPs	Australia is a contributor to two A/P workshops to assist in the development of approaches to address emissions of POPs chemicals	Director, International Chemicals and Scheduled Waste Section, Environment Australia Fax: 612 6274 1230

8.3 Comments

In determining how best to direct its international involvement and assistance, Australia takes into account its own particular characteristics as an:

- ecologically unique country with rich but threatened biodiversity, requiring the effective and efficient assessment and registration of new chemicals so that their impact on the Australian environment can be established;

- exporting country, with a particular focus of exporting clean and safe agricultural products;
- urbanised and developed country with growing links to many countries in the Asia-Pacific region.

Australia has a strong interest in the environmental and health benefits flowing from outcomes of most international fora which consider the management of chemicals. We also believe that major efficiencies can result from the opportunities these fora provide for burden sharing among countries. International activities in which Australia participates include:

- development of internationally recognised testing methods and standards;
- assessing the safety of new and existing chemicals;
- progressive implementation of harmonised labelling and classification systems;
- enhanced information exchange provisions;
- identification of new and emerging issues which are best handled by cooperative effort.

Australia is also a party to nearly all international conventions affecting chemicals management and has fulfilled its commitments under these agreements. Australia believes that international activity aimed at improving chemicals management should be supported by:

- sound assessment of the immediate and longer terms risks using stringent scientific criteria which have been developed in an open and transparent process;
- consensus, resulting from an inclusive and transparent process, that the activity will address a problem which is recognised as a problem of global concern with benefit commensurate with cost;
- concentration on outcomes and clearly articulated goals.

Finally, as a country in the Asia Pacific region, Australia has a particular interest in assisting in the sustainable development of many of its closer neighbours, with a particular emphasis on appropriate technologies and information exchange in the area of chemicals management.

Chapter

9

CONCLUSION

The Australian National Profile is considered in the context of Agenda 21

9.1 Chapter 19 of Agenda 21

As discussed in the Introduction, national efforts to develop profiles of chemicals management infrastructure have arisen largely in response to the environmental vision for the future set down in Agenda 21. Chapter 19 of Agenda 21 specifically addresses the sound management of chemicals.

The profile provides Australia with an opportunity to gauge progress against the six areas of activity set out in Chapter 19. Although some of these activities are directed primarily at co-operative international action, Chapter 19 provides a useful benchmark against which to measure Australia's progress at the domestic level. The topics are:

- expanding and accelerating international assessment of chemical risks;
- harmonisation of classification and labelling of chemicals;
- information exchange on toxic chemicals and chemical risks;
- establishment of risk reduction programmes;
- strengthening of national capabilities and capacities for management of chemicals;
- prevention of illegal international traffic in toxic and dangerous products; and

Chapter 19 also identified a seven area, the enhancement of cooperation across programme areas, and this last area can serve as a basis to conclude discussion of Australia's chemicals management infrastructure.

9.1.1 Expanding and accelerating assessment of chemicals risks

Four reforms, identified in Chapter 3, are widely regarded as being successful in expanding and accelerating assessment of chemicals in Australia. The two primary reforms were the arrangements introduced in 1989 for the assessment of industrial chemicals under the National Industrial Chemicals Notification and Assessments Scheme (NICNAS), and the advent in 1994 of national arrangements for the assessment and clearance of agricultural and veterinary chemicals under the National Registration Authority for Agricultural and Veterinary Chemicals (NRA). These achievements have been repeated in the management of food additives and pharmaceuticals.

These programs has also begun to address existing chemicals with both programs having active existing chemicals review programs. The agencies (NICNAS and NRA) also exchange assessment report information and use assessments from overseas.

These programs mean that Australia now has uniform national assessment of chemicals. It is important to note that these reforms were initiated prior to the drafting of Agenda 21 with the aim of achieving more efficient and effective assessment of chemicals. However, the goal of efficiency is consistent with Chapter 19 of Agenda 21 which recognises the resource intensive nature of assessment (paragraph 19.12) and encourages cost-effective assessments as a means of improving assessment. This approach also underpins Australia's international support for burden sharing approaches.

Australia's reforms can be seen as having contributed to efficiencies in this area and will continue to do so, particular given the activities of NGOs (Chapter 5). Furthermore, Australia is active in capacity building with both Chapters 7 and 8 highlighting valuable contributions by government.

9.1.2 Harmonisation of classification and labeling of chemicals

Australia has also made major advances with improved domestic classification and labelling schemes for chemicals. National assessment and/or registration programmes ensure that chemicals are uniformly and consistently assessed, labelled and classified (Chapter 3). Australia has also pursued harmonisation externally, working cooperatively at the bilateral, regional and international levels (Chapter 8).

9.1.3 Information exchange on toxic chemicals and chemical risks

It is recognised that 'the broadest possible awareness of chemical risks is a prerequisite for achieving chemical safety' (Agenda 21, Chapter 19, 19.8). Some aspects of Australia's activity in this area could be improved.

The establishment of national assessment and/or registration processes has improved chemicals hazard communication (Chapter 3), particularly in relation to toxic chemicals. Workers and the community are informed about the hazards posed by various chemicals through uniform systems of labelling and the provision of assessment reports. This remains an expanding area, however, with the community and workers seeking information in relation to chemicals on synergistic effects and inerts.

However, the limits of current systems for gathering and providing chemical use and pollution data to the wider community have also been highlighted in this profile. Chapter 2 and 6 highlight certain inadequacies in comprehensive national data relating to chemicals management, primarily those on usage and emission of chemicals. Chapter 6 also discusses some of the recent advances made by government to address these deficiencies, in particular, the establishment of a national emissions inventory (the National Pollutant Inventory) and the expanding network

of State and Territory information. Chapter 5 notes the important contributions of Australia's network of non-government organisations to information available to the community.

9.1.4 Establishment of risk reduction programmes

Establishment of risk reduction programmes is an area of ongoing activity. Australia has embraced a range of risk reduction concepts including cleaner production (Chapter 5), integrated pest management (Appendix 3) and emergency preparedness. In particular, risk reduction achievements in Australia have included:

- establishment of national assessment or registration programs which identify and then reduce risks associated with chemicals;
- development of national model regulations for the control of workplace hazardous substances (section 3.2);
- review and improvement of environment protection legislation underpinned by concepts such as polluter pays, load-based licences, and best practice management;
- development of the schedules waste strategy that addresses the management of persistent organic pollutants;
- consideration of strategies for the safe disposal and handling of unwanted agricultural and veterinary chemicals and containers;
- the move towards uniform assessment of contaminated sites (through the development of a Contaminated Sites Measure by the National Environment Protection Council);
- NGOs have also vigorously supported and pursued risk reduction activity (Chapter 5).

Australia engages in risk reduction on an individual chemical basis through its four chemicals assessment programs. For instance, the registration of ag/vet chemicals has as its primary focus the minimisation of chemical risk to humans, the environment, treated species and trade and as such is a risk reduction program. The recently initiated priority existing chemical review programs (for ag/vet and industrial chemicals) is another ongoing chemical by chemical risk reduction program.

In addition, a range of individual chemicals or groups of chemicals have been targeted through co-operative Commonwealth, State and Territory government efforts including; action on ozone depletors (under the auspices of the Montreal protocol); a strong lead risk reduction campaign; and activity to reduce risks associated with organo-chlorine products, through collection, phase-out and destruction.

Risk reduction is also supported by the presence of comprehensive broad based risk reduction programs, especially at the State and Territory level. These are supported by legislative controls that provide overall protection for those exposed to risks associated with chemicals (e.g.,

workers, environment) and through other programs such as cleaner production and best practice environmental management.

Risk reduction remains a growing and active area of chemicals management.

9.1.5 Strengthening of national capabilities and capacities for management of chemicals

Sections 9.1.1 to 9.1.5, and the profile as a whole, discuss Australia's activities of the past decade in strengthening its capacity to manage chemicals. Appendix 1 shows the level of legislative activity in Australia since the 1992 Rio Earth Summit, related to chemicals management infrastructure. Highlights include:

- Establishment or enhancement of four national schemes for chemicals management (see Chapter 3): in 1989—assessment of therapeutic goods and industrial chemicals; in 1991—food additives; and in 1994—agricultural and veterinary products.
- Road transport reform in 1995.

In addition, while this profile has not focused primarily on State and Territory activity in relation to chemicals management, it is clear, from the legislative activity indicated in Appendix 1, that significant reforms have occurred in many States over the last ten years. For example, in 1996, Tasmania substantially overhauled legislation associated with chemicals management in particular implementing a hazardous waste management strategy. Other States and Territories have also introduced similar schemes (for example Victoria banned liquid wastes to landfills in the 1980s) and this remains an ongoing area of activity (for example the Northern Territory in 1998 enacted a substantial new range of environment protection activity and Victoria released a new industrial waste management strategy).

It is important to note that such processes are not seen as ever being complete. The discussion of priority concerns and the introduction of NGO activities in Chapter 5 highlight this fact. The evolving nature of Australia's infrastructure is demonstrated by the regular reviews of current chemicals management conducted by governments (Chapter 4) and the recent legislative activity outlined in Appendix 1.

9.1.6 Control of traffic in toxic and dangerous goods

In terms of Chapter 19, Agenda 21, activity has focused primarily on traffic of controlled substances (e.g., drugs). In Australia, illegal import or export of dangerous goods is not considered a major issue, given our relative distance and isolation (i.e., an island state) from other countries.

However, in domestic terms, the text of this subject in Chapter 19 can be interpreted as addressing improved control of traffic of toxic and

dangerous goods. This is relevant in Australia given the long distances separating regions, our reliance on road transport, and the multiplicity of State and Territory governments.

Activity in Australia in this area has concentrated on harmonising regulations for the transport of dangerous goods and controlled wastes. Australia has successfully implemented the UN Code on dangerous goods transport and has recently (June 1998) agreed to uniform measures of the trans-boundary movement of controlled waste (section 3.7).

Implementation of the Basel Convention has led to many wastes no longer being exported. In addition, the absence of high temperature incinerators has led to the creation of an innovative range of obsolete chemicals or waste strategies and destruction technologies. Lastly, Customs Controls regime has allowed effective control of imports and exports

9.2 Enhancement of cooperation across programme areas

Over recent years, partly driven by the higher profile of chemicals management issues arising out of the 1992 Rio Earth Summit, a number of initiatives in Australia have given government officials at all levels, and some industry and environment group representatives, a stronger sense of moving forward on chemicals management. These include the initiatives by governments (Chapter 3 and 4) and non-government organisations (Chapter 5).

However, with this strengthening in chemicals management, has come the increased awareness that Australia also needs to enhance cooperation across programme areas. The range of coordination and consultative forums were discussed in Chapter 4, but the growth of these coordinating bodies may itself be emerging as a structural problem with complex committees, forums, and task forces tackling coordination issues. There has been concern expressed by both industry and environmental non-government organisations that the amount of time and money spent on these forums has not always been reflected in the outcomes. Some NGOs have also noted that resources are constraining their ability to participate as fully as they would wish.

It would be reasonable to conclude that developing a National Profile of Chemicals Management Infrastructure is itself an important part of improving cooperation across programme areas in Australia. In the period since the 1992 Rio Earth Summit, Australia has implemented significant improvement in chemicals management. This is offset in part by the resulting complexities which have emerged and the recognition that problems remain to be addressed.

Appendix

1

OVERVIEW OF THE LEGAL INSTRUMENTS FOR MANAGING CHEMICALS IN AUSTRALIA

The table on the following pages is drawn largely from Section 1.7 of the 1997 Australian New Zealand Environment and Conservation Council's *Guide to Environment Legislation in Australia and New Zealand*, Fifth Edition, Report No. 31. The Council's contribution to the National Profile is gratefully acknowledged.

In general, the legislation described below is that effective as of August 1996, though some more recent and highly relevant examples have been included. Also, additional information has been included to cover OH&S and public health legislation.

Table A1–1: Legal instruments for managing chemicals in Australia

Commonwealth	
Agricultural and Veterinary Chemicals (Administration) Act 1992 and Agricultural and Veterinary Chemicals (Code) Act 1994	<p>This legislation provides for the operation of the National Registration Scheme as described in section 4.3.</p> <p><i>Responsible Agency:</i> National Registration Authority for Agricultural and Veterinary Chemicals, created by the legislation. Department of Agriculture, Fisheries and Forestry</p>
Carriage of Goods by Sea Act 1991	<p>Commits the signatories to the 1978 Hamburg Convention to observing recognised methods for the safe transport of dangerous goods at sea.</p> <p><i>Responsible Agency:</i> Department of Transport</p>
Chemicals Weapons (Prohibition) Act 1994	<p>Provides Australia’s response to the convention on the prohibition of the development, production, stockpiling and use of chemical weapons and their destruction. Schedules list of toxic chemicals and their precursors.</p> <p><i>Responsible Agency:</i> Department of Foreign Affairs and Trade</p>
Customs Act 1901	<p>Gives the Commonwealth power to regulate import and export including the prohibition, restrictions, conditions or licenses. Schedules to the Customs (Prohibited Imports) Regulations list products and substances which are either prohibited, subject to restrictions or require permission. Categories of products include drugs, those with heavy metal components, etc. Other schedules restrict certain exports.</p> <p><i>Responsible Agency:</i> Attorney General’s Department</p>
Environment Protection (Alligator Rivers Region) Act 1978	<p>The object of the Office of the Supervising Scientist established under this Act is to protect this Region, located in the Northern Territory, from the harmful effects of uranium mining and related activity.</p> <p><i>Responsible Agency:</i> Department of the Environment and Heritage—Supervising Scientist</p>
Environment Protection (Impacts of Proposals) Act 1974	<p>Ensures significant environment matters are considered in relation to actions, proposals and decisions taken by or on behalf of the Federal Government.</p> <p><i>Responsible Agency:</i> Department of the Environment and Heritage</p>
Environment Protection (Sea Dumping) Act 1982	<p>The Act controls the dumping of wastes into the sea through a system of permits and licences. Provides for a regime of offences and penalties for unauthorised or excessive dumping.</p> <p><i>Responsible Agency:</i> Department of the Environment and Heritage</p>
Hazardous Waste (Regulation of Exports and Imports) Act 1989	<p>Implements the Basel Convention (1989) on Hazardous Wastes; controls the transport, storage, export and import of hazardous substances as defined in the Act. Amended 1996.</p> <p><i>Responsible Agency:</i> Department of the Environment and Heritage</p>
Industrial Chemicals (Notification and Assessment) Act 1989	<p>Forms the basis of NICNAS described in section 4.2. Creates an Australian inventory of chemical substances. Deals with the importation, storage, use, transportation and handling of these substances. Reports must be prepared and kept in relation to these.</p> <p><i>Responsible Agency:</i> NOHSC. Department of Industrial Relations and Small Business—Worksafe Australia</p>

National Environment Protection Council Act 1994	Establishes the National Environment Protection Council pursuant to the Intergovernmental Agreement on the Environment. Cooperative scheme between Federal and State governments to create uniform protection from air, water, soil and noise pollution (see section 4.2). <i>Responsible Agency:</i> National Environment Protection Council Service Corporation
National Food Authority Act 1991 and ANZFA Act 1996	Establishes National Food Authority. Develops food standards for composition, residue limits, testing, packaging, storage and labelling of food. See section 3.5. Establishes Food Standards Code. <i>Responsible Agency:</i> Department of Health and Aged Care
National Occupational Health and Safety Commission Act 1985	Establishes the National Occupational Health and Safety Commission (NOHSC), known as Worksafe Australia (see section 4.2 & Appendix 3). <i>Responsible Agency:</i> Department of Industrial Relations and Small Business
National Residue Survey Administration Act 1992	The NRS Trust Fund is established to receive payments and to fund survey programs (as approved by the Minister) to test for residues of contaminants in Australian-produced animal and plant foods. <i>Responsible Agency:</i> Department of Agriculture, Fisheries and Forestry
Ozone Protection Act 1989, Ozone Protection Amendment Act 1995, Ozone Protection (Licence Fees-Imports) and Ozone Protection (Licence Fees-Manufacture) Acts 1995	These Acts implement the Vienna Convention for the Protection of the Ozone Layer, as well as the subsequent Montreal and London Protocols, by regulating the manufacture and use in, and import into and export from, Australia of substances that deplete the earth's ozone layer. The 1995 Amendment Act establishes the Ozone Protection Reserve and the Ozone Protection Trust Fund. <i>Responsible Agency:</i> Department of the Environment and Heritage
Petroleum (Submerged Lands) Act 1967	Provides terms and conditions under which drilling for oil under the sea may take place, including strict safety requirements, which recognises the environmental hazards associated with drilling for oil at sea. <i>Responsible Agency:</i> Department of Agriculture, Fisheries and Forestry
Pipeline Authority Act 1973	The Authority is required to ensure there is no leakage from, damage to, or deterioration in the condition of, pipelines for which it is responsible. <i>Responsible Agency:</i> Department of Agriculture, Fisheries and Forestry
Protection of the Sea (Civil Liability) Act 1981, Protection of the Sea (Powers of Intervention) Act 1981 and Protection of the Sea (Prevention of Pollution from Ships) Act 1983	Under these Acts, procedures specified under the Marpol Conventions are implemented to minimise the occurrence of oil spills at sea, to provide for action that may be taken when such spills occur and to provide a system of redress where damage occurs as a result of a spill. <i>Responsible Agency:</i> Department of Transport

Road Transport Reform (Dangerous Goods) Act 1995	See section 3.7. Allows for the making of regulations regarding categories of dangerous goods, their packaging and transport and the vehicles in which they may be transported. Regulations may be made which relate to the licensing of drivers to transport the goods and the accreditation of those who may possess and transport the goods. Authorised officers may enter and search premises for dangerous goods if they believe a dangerous situation exists. They may require an individual to divulge their name and address and stop or detain vehicles. Part 5 of the Act creates a number of offences and provides for penalties. <i>Responsible Agency:</i> Department of Transport
Therapeutic Goods Act 1989	Aims to develop national system of controls on quality, safety and efficacy of therapeutic goods (see section 3.3). <i>Responsible Agency:</i> Department of Health and Aged Care
Trade Practices Act 1974	Part 5 applies to consumer protection. Prescribed consumer products must comply with safety standards for local consumption or export. <i>Responsible Agency:</i> Attorney General's Department

New South Wales

Agricultural and Veterinary Chemicals (New South Wales) Act 1994	Applies the Commonwealth <i>Agricultural and Veterinary (Code) Act 1994</i> to NSW. <i>Responsible Agency:</i> NSW Agriculture
Clean Air Act 1961 and the Clean Water Act 1970	Regulates and controls air and water pollution. These Act will be repealed when the <i>Protection of the Environment Operations Act 1997</i> is commenced.
Contaminated Land Management Act 1997	Applies polluter pay principles and provides the EPA with the power to require investigation or remediation of land contamination that is posing a significant risk of harm to human health or the environment. When commenced will replace portions of the Environmentally Hazardous Chemicals Act 1985. <i>Responsible Agency:</i> Environment Protection Authority
Dangerous Goods Act 1975	Provides for the control of dangerous goods by means of a licensing system. Also deals with handling and storage of dangerous goods and the transport of explosives. <i>Responsible Agency:</i> WorkCover Authority
Environmental Offences and Penalties Act 1989	Provides a regime of offences and penalties for engaging in activities that result in, or have the potential to result in, pollution of the environment. The most serious offences, namely the Tier 1 offences, are created under the Act itself. The Tier 2 offences are those created under the <i>Clean Air Act 1961</i> , <i>Clean Waters Act 1970</i> , <i>Noise Control Act 1975</i> and <i>Pollution Control Act 1970</i> (or under the <i>Protection of the Environment Operations Act 1997</i> when commenced) but which are, by virtue of the wording used in those Acts, offences against the <i>Environmental Offences and Penalties Act 1989</i> . <i>Responsible Agency:</i> Environment Protection Authority
Environmental Planning and Assessment Act 1979	For developments involving hazardous substances or processes, an environmental impact statement including a hazard analysis and safety plan is required. <i>Responsible Agency:</i> Department of Urban Affairs and Planning

Environmentally Hazardous Chemicals Act 1985	The Act provides for the regulation of activities in relation to chemicals and chemical wastes through chemical control orders. The Act makes provision for the control of activities which contaminate land and for the removal of contamination from land. The provisions relating to contaminated land will be repealed when the Contaminated Land Management Act commences. <i>Responsible Agency:</i> Environment Protection Authority
Fertilisers Act 1985	Provides for the safe production, use, handling and storage of a number of listed fertilisers. <i>Responsible Agency:</i> NSW Agriculture
Fire Brigades Act 1989	<i>Fires Brigades (Hazardous Materials) Amendment Act 1993</i> makes provision to ensure that the NSW Fire Brigades are able to provide appropriate responses to hazardous materials incidents and in particular incidents involving the transport and storage of hazardous chemicals.
Food Act 1989	Regulates the Food Standards Code. Addresses composition of food, additives permitted in 'potable water', etc and labelling. <i>Responsible Agency:</i> Department of Health
Land and Environment Court Act 1979	The Court established under this Act has the power to deal with all cases of unauthorised or excessive pollution. <i>Responsible Agency:</i> Attorney General's Department
National Environment Protection Council (New South Wales) 1995	NSW part in the co-operative legislative scheme to establish the National Environment Protection Council pursuant to the Intergovernmental Agreement on the Environment. <i>Responsible Agency:</i> Environment Protection Authority
Navigation Act 1901	Prohibits the carriage of specified dangerous goods across, and allowing the flow of refuse from chemical works, slaughterhouses or other establishments, into the State's navigable waters.
Ozone Protection Act 1989	This Act provides broad power to make regulations to control or prohibit the production or use of substances that deplete stratospheric ozone when emitted into the atmosphere, and articles which contain or use such substances. <i>Responsible Agency:</i> Environment Protection Authority
Pesticides Act 1978	Controls the use of pesticides beyond the point of sale in NSW. <i>Responsible Agency:</i> Environment Protection Authority
Petroleum (Onshore) Act 1991 oil-based substances	Provides for the safe exploration for, and storage, transport and use of, oil and oil-based substances.
Petroleum (Submerged Lands) Act 1982	Requires the observance of strict guidelines in the drilling for oil beneath the sea-bed and subsoil located beneath the State's territorial waters.
Pipelines Act 1967	Pipelines are required to be constructed and maintained in such way as to ensure there is no leakage from them.
Poisons and Therapeutic Goods Act 1966	Regulates poisons and drugs including labelling and standards for quality. <i>Responsible Agency:</i> Department of Health

Pollution Control Act 1970	<p>This Act deals with the granting, varying, revoking of, and the conditions which may be attached to, licences and pollution control approvals under the Clean Air Act and Noise Control Act. Will be repealed when the <i>Protection of the Environment Operations Act 1997</i> commences.</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>
Protection of the Environment Administration Act 1991	<p>Creates the NSW Environment Protection Authority (EPA) for NSW, and provides it with a wide range of functions and powers. The EPA's overriding objective is to protect, enhance and restore the quality of the environment in NSW.</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>
Protection of the Environment Operations Act 1997	<p>Brings the separate statutes relating to pollution under a single Act. It replaces the <i>Clean Air 1961</i>, the <i>Clean Water Act 1970</i>, the <i>Environment Offences and Penalties Act 1989</i>, the <i>Noise Control Act 1975</i> and the <i>Pollution Control Act 1970</i> and incorporates the major regulatory provisions of the <i>Waste Minimisation and Management Act 1995</i>.</p> <p><i>Responsible Agency:</i> Environment Protection Authority (To commence late 1998)</p>
Public Health Act 1991	<p>Under this Act, certain activities and trades are proclaimed to be noxious and must be registered under this Act.</p> <p><i>Responsible Agency:</i> Department of Health</p>
Road and Rail Transport (Dangerous Goods) Act 1997	<p>Regulates the transport of dangerous goods (other than explosives) by road and rail as part of a national scheme for road transport.</p> <p><i>Responsible Agency:</i> Environment Protection Authority with respect to road and rail aspects, Workcover Authority for the remainder (eg. packaging).</p>
Stock (Chemical Residues) Act 1975	<p>Allows an inspector, appointed under the <i>Stock Diseases Act 1923</i>, to enter buildings, vessels or land to take samples for the purpose of detecting whether anything in the sample is capable of causing stock to be residue affected.</p> <p><i>Responsible Agency:</i> NSW Agriculture</p>
Unhealthy Building Land Act 1990	<p>Land deemed 'unhealthy' must have approval given by the EPA before building is allowed. Information about such effected land is made available through the Land Title Office.</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>
Waste Minimisation and Management Act 1995	<p>Seeks to achieve a 60% reduction in the disposal of waste in NSW by encouraging the avoidance of waste, its reuse, recycling and reprocessing. Local government, industry and the community are to be involved in the development of a state wide waste policy. Waste management regions and Waste Boards are created. A licensing scheme with respect to waste facilities and transport is created. Aspects of this act will be repealed when the <i>Protection of Environment Operations Act</i> commences</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>

Victoria

Agricultural and Veterinary Chemicals (Control of Use) Act 1992	<p>Provides for prescription of standards for the use of agricultural chemicals, also provides for control by licensing of commercial operators ground and aerial.</p> <p><i>Responsible Agency:</i> Department of Natural Resources and Environment</p>
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Agricultural and Veterinary Chemicals (Victoria) Act 1994	<p>Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to Victoria.</p> <p><i>Responsible Agency:</i> Department of Natural Resources and Environment</p>
Dangerous Goods Act 1985	<p>Regulates the storage, transportation, sale and use of dangerous goods, as well as the importation of explosives into Victoria.</p> <p><i>Responsible Agency:</i> Department of Treasury and Finance (Victorian Workcover Authority)</p>
Drugs, Poisons and Controlled Substances Act 1981	<p>Regulates the manufacture, sale, supply and purchase of drugs and poisons and other controlled substances. Provides for a system of authorising, licensing and permitting those who engage in these activities.</p> <p><i>Responsible Agency:</i> Department of Human Services</p>
Environment Protection Act 1970	<p>The Act provides for works approvals and licensing of premises that are likely to be emitting or handling toxic or hazardous substances; see also Regulations and State Environment Protection Policies made under the Act: <i>Environment Protection (Industrial Waste) Act 1985</i> amends this Act to create offences and penalties in relation to unauthorised discharge of industrial wastes; <i>Environment Protection (Ozone Layer) Act 1989</i>, amends this Act to allow for control on the use of substances that are known to be responsible for the depletion of the ozone layer.</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>
Health Act 1958	<p>Controls the use of pesticides by licensing pest control operators and registering pest control businesses. Regulates the use, transport and disposal of radioactive substances.</p> <p><i>Responsible Agency:</i> Department of Human Services</p>
Occupational Health and Safety Act 1985	<p>Regulates, among other things, all aspects of the use of hazardous substances in the workplace.</p> <p><i>Responsible Agency:</i> Department of Treasury and Finance (Victorian Workcover Authority)</p>
Marine Act 1988	<p>Part V of this act deals with pollution. It is prohibited to discharge any oil, oily mixture, or an undesirable substance into the waters of the State.</p> <p><i>Responsible Agency:</i> Department of Natural Resources and Environment and Environment</p>
Mining Resources Development Act 1990	<p>Establishes health and safety requirements in mines</p> <p><i>Responsible Agency:</i> Department of Natural Resources and Environment and Environment</p>
National Environment Protection Council (Victoria) Act 1995	<p>Victorian part in the co-operative legislative scheme to establish the National Environment Protection Council pursuant to the Intergovernmental Agreement on the Environment.</p> <p><i>Responsible Agency:</i> Environment Protection Authority</p>
Petroleum Act 1958	<p>Requires that those engaged in the oil industry cause minimal possible damage to land, to plug unused wells and to construct embankments so as to contain damage from spills: provides for the proper and safe storage and transport of oil-based products (avoid leakage from tanks and minimise risk of accidents).</p>
Petroleum (Submerged Lands) Act 1982	<p>One of the objects of the Act is to protect the sea-bed and superjacent sea from the adverse effects of activities associated with the drilling for oil in the State's coastal waters.</p>
Pipelines Act 1967	<p>Specifies that pipelines must be constructed and maintained so as to avoid leakage.</p>

Pollution of Waters by Oil and Noxious Substances Act 1986	Prohibits pollution of the State's waters by oil, oil-based and other specified toxic substances.
Road Transport (Dangerous Goods) Act 1995	Regulates the transport of dangerous goods by road by applying parts of the Commonwealth <i>Road Transport Reform (Dangerous Goods) Act 1995</i> to Victoria. <i>Responsible Agency:</i> Department of Treasury and Finance (Victorian Workcover Authority)

Queensland

Agricultural Chemicals Distribution Control Act 1966	Regulates the distribution of agricultural chemicals from aircraft and herbicides from ground equipment. <i>Responsible Agency:</i> Department of Primary Industries
Agricultural Standards Act 1994	Controls the sale of seeds, fertilisers, etc. <i>Responsible Agency:</i> Department of Primary Industries
Agricultural and Veterinary Chemicals (Queensland) Act 1994	Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to Queensland. <i>Responsible Agency:</i> Department of Primary Industries
Carriage of Dangerous Goods by Road Act 1984	Regulates the carriage by road of dangerous goods and the duties of persons engaged therein, and related matters. <i>Responsible Agency:</i> Department of Transport
Chemical Usage (Agricultural and Veterinary) Control Act 1988	Regulates the use agriculture and veterinary chemicals. <i>Responsible Agency:</i> Department of Primary Industries
Environmental Protection Act 1994	Provides for an integrated management program that is intended to be consistent with ecologically sustainable development. Includes the grant of licences for the discharge of pollutants and contaminants. Also requires notification of presence of toxic or hazardous substances on land, and establishes procedures for investigating, remediating and validating contaminated land prior to a future changed use; provides for a Contaminated Sites Register, that may be searched by any member of the public. <i>Responsible Agency:</i> Department of Environment and Heritage
Gurulmundi Secure Landfill Agreement Act 1992	Provides for and establishes management requirements for a disposal site for pretreated paint, pesticide and solvent wastes. <i>Responsible Agency:</i> Department of the Environment and Heritage
Food Act 1981	Regulates the preparation, packaging, labelling and sale of foods with maximum permitted limits of residues for chemicals and food additives. <i>Responsible Agency:</i> Department of Health
Health Act 1937	Wide ranging powers. Regulates the use of pesticides and fumigants by licensed operators. Regulates hazardous substances by requiring signage etc. Regulates therapeutic goods. Controls the manufacture, storage and sale of drugs and poisons. Regulates the content of heavy metals in water or food handling items. <i>Responsible Agency:</i> Department of Health
National Environment Protection Council (Queensland) Act 1994	<i>Responsible Agency:</i> Department of Environment and Heritage

Petroleum Act 1923	Regulates the transport and storage of petroleum and related products.
Petroleum (Submerged Lands) Act 1982	One of the objects of the Act is to protect the sea-bed and the superjacent sea from damage from activities associated with oil drilling in the State's coastal waters. <i>Responsible Agency:</i> Department of Mines and Energy.
Sea Carriage of Goods (State) Act 1930	Allows for any goods of an inflammable, explosive or dangerous nature, to the shipment of which the persons responsible have not consented, to be at any time landed at a place, destroyed or rendered harmless by the carrier. <i>Responsible Agency:</i> Department of Transport
State Development and Public Works Organisation Act 1971	<i>1991 Amendment Act</i> (1991 No. 24) requires issues affecting public health to be considered and taken into account in relation to activities relating to public works. <i>Responsible Agency:</i> Department of Premier and Cabinet.
Workplace Health and Safety Act 1995	Controls use of hazardous substances in the workplace. <i>Responsible Agency:</i> Department of Employment, Training and Industrial Relations.

South Australia

Agricultural Chemicals Act 1955	Regulates the sale of agricultural chemicals, and their use from aircraft and ground equipment. <i>Responsible Agency:</i> Department of Primary Industries
Agricultural and Veterinary Chemicals (South Australia) Act 1994	Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to South Australia. <i>Responsible Agency:</i> Department of Primary Industries
Controlled Substances Act 1984	Regulates various drugs and poisons. <i>Responsible Agency:</i> South Australian Health Commission
Dangerous Substances Act 1979	Regulates the keeping, handling, conveyance, use, disposal and transport of any toxic, corrosive, flammable or otherwise dangerous substance. <i>Responsible Agency:</i> Department of Industrial Affairs and Administrative Services
Environment Protection Act 1993	Incorporates provisions that limit the manufacture, sale and use of substances (with a view to phasing them out over the next few years) which are known to be depleting the earth's ozone layer. Also provides for the management of wastes and promotes waste reduction. <i>Responsible Agency:</i> Department of Environment, Heritage and Aboriginal Affairs
Environment Protection (Sea Dumping) Act 1984	<i>Environment Protection (Sea Dumping) (Coastal Waters and Radioactive Material) Amendment Act 1991</i> prohibits the dumping or otherwise depositing of radioactive wastes in the State's coastal waters. <i>Responsible Agency:</i> Department of Environment, Heritage and Aboriginal Affairs

Explosives Act 1936	Minister may declare an area for the safe storage and use of explosives. Also provides for the safe transport of explosives at requiring vessels to fly appropriate flag(s). <i>Responsible Agency:</i> Department of Industrial Affairs and Administrative Affairs
Occupational Health Safety and Welfare Act 1986	Controls use of hazardous substances in work places. <i>Responsible Agency:</i> Department of Industrial Affairs and Administrative Affairs —Workcover Corporation
Petroleum Act 1940	Regulates the storage and transport of petroleum and related products.
Petroleum (Submerged Lands) Act 1982	One of the objects of the Act is to protect the sea bed and superjacent sea from the adverse effects of activities associated with drilling for oil in the State's coastal waters.
Pollution of Waters by Oil and Noxious Substances Act 1987	Prohibits the pollution of the State's waters by oil and oil-based and other specified toxic substances. <i>Responsible Agency:</i> Department of Transport
Public and Environmental Health Act 1987	Regulates and controls the manufacture, possession, use, transport, sale and disposal of radioactive and other noxious substances. <i>Responsible Agency:</i> South Australian Health Commission

Western Australia

Aerial Spraying Control Act 1966	Provides for licensing of pilots and aircraft engaged in aerial spraying, and regulates aspects of aerial spraying of agricultural chemicals. <i>Responsible Agency:</i> Agriculture WA
Agricultural Produce (Chemical Residues) Act 1983	Allows for inspection of soil and other components to test for the presence of chemical residues that could affect the agriculturally based industry. <i>Responsible Agency:</i> Agriculture WA
Agricultural and Veterinary Chemicals (Western Australia) Act 1995	Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to WA. <i>Responsible Agency:</i> Agriculture WA
Environment Protection Act 1986 Environment	The Act establishes a system that restricts the amount of hazardous substances that may be released into the environment. <i>Responsible Agency:</i> Department of Environmental Protection
Explosives and Dangerous Goods Act 1961	Regulates the manufacture, import and use of explosives, as well as the classification, marking, storage, carriage and sale of explosives and dangerous goods. Includes Dangerous Goods legislation 1992. <i>Responsible Agency:</i> Department of Minerals and Energy
Fertiliser Act 1977	Regulates the manufacture, storage and use of fertilisers. <i>Responsible Agency:</i> Agriculture WA
Fire Brigades Act 1942 (as amended 1994)	The Act makes provisions for the WA Fire and Rescue Service, where required, to respond to hazardous materials emergencies that may occur anywhere in the State. <i>Responsible Agency -</i> WA Fire and Rescue Services

Health Act 1911	Provides for the preservation of public health concerning noxious trades and pesticides. <i>Responsible Agency:</i> Health Department of WA
Mines Safety and Inspection Act 1994	States the general duties of employers and employees with regard to occupational health, safety and welfare in the mining industry. Sets out the duties of employers and managers in the management of mines. Provides for inspectors of mines to be appointed and prescribes offences and penalties for breach of the various duties described. <i>Responsible Agency:</i> Department of Minerals and Energy
Occupational Safety and Health Act 1984	Regulates the safe storage and handling of dangerous substances in the work place. <i>Responsible Agency:</i> Worksafe WA
Petroleum Act 1967	Regulates the transport and storage of petroleum and related products.
Petroleum Pipelines Act 1969 Petroleum (Submerged Lands) Act 1982	Requires that pipelines be constructed and maintained so as to ensure there is no leakage from them. One of the objects of the Act is to ensure that the sea-bed and superjacent waters of the State's coastal sea are not adversely affected by sea-based oil drilling activities. <i>Responsible Agency:</i> Department of Minerals and Energy
Poisons Act 1964	Controls the manufacture, distribution and sale of poisons through licensing. <i>Responsible Agency:</i> Health Department of WA
Pollution of Waters by Oil and Noxious Substances Act 1987	Prohibits the pollution of the State's waters by oil and oil mixtures. <i>Responsible Agency:</i> Department of Transport
Veterinary Preparations and Animal Feeding Stuffs Act 1974	Controls the manufacture and use of scheduled substances, and ensures that they do not cause harm to animals or humans. <i>Responsible Agency:</i> Agriculture WA
Water and River Commissions Act 1995	Places restrictions on disposal of chemicals in a manner that may adversely impact on rivers, lakes and other water bodies. <i>Responsible Agency:</i> WA Waters and Rivers Commission.
Western Australian Marine Act 1982	Places restrictions on the carriage of dangerous goods, which must be clearly marked and safely packaged and stored for transport. <i>Responsible Agency:</i> Department of Transport

Tasmania

Approvals (Deadlines) Act 1993	Imposes deadlines on determination of applications for approvals made under <i>the Dangerous Goods Act 1976</i> , for consents under the <i>Local Government Act 1993</i> and licences under the <i>Radiation Act 1977</i> .
Agricultural and Veterinary Chemicals (Control of Use) Act 1995	Controls the use and application of agricultural and veterinary chemical products. Provides for restrictions and prohibitions on the use of or in dealing with certain chemical products. <i>Responsible Agency:</i> Department of Primary Industry and Fisheries

Agricultural and Veterinary Chemicals (Tasmania) Act 1994	Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to Tasmania. <i>Responsible Agency:</i> Department of Primary Industry and Fisheries
Chlorofluorocarbons and Other Ozone Depleting Substances Control Act 1998	Provides for the control of ozone depleting substances in giving effect to the Montreal protocol and related international treaties. <i>Responsible Agency:</i> Department of Environment and Land Management
Dangerous Goods Act 1976	Regulates the manufacture, keeping, conveyance, use and sale of explosives, inflammable liquids and other dangerous goods. <i>Responsible Agency:</i> Workplace Standards Authority
Environmental Management and Pollution Control Act 1994	Establishes the Board of Environmental Management and Pollution Control with functions including the protection of the environment in Tasmania and the prevention of any act or omission capable of causing pollution. <i>Responsible Agency:</i> Department of Environment and Land Management
Environment Protection (Sea Dumping) Act 1987	<i>Responsible Agency:</i> Department of Environment and Land Management
Fertilisers Act 1993	Controls the manufacture, use and storage of fertilisers and substances used in the manufacture of these. <i>Responsible Agency:</i> Department of Primary Industry and Fisheries
Health and Safety Act	Controls the use of hazardous substances in the workplace. <i>Responsible Agency:</i> Workplace Standards Authority
Local Government Act 1993	Consent is required to conduct an offensive trade from certain premises specified in this Act.
National Environment Protection Council (Tasmania) 1995	Tasmanian part in the co-operative legislative scheme to establish the National Environment Protection Council pursuant to the <i>Intergovernmental Agreement on the Environment</i> . <i>Responsible Agency:</i> Department of Environment and Land Management
Poisons Act 1971	Provides for the proper labelling of anything containing poisonous substances, as well as for their disposal. <i>Responsible Agency:</i> Department of Community and Health Services.
Police Act 1935	Section 19 of the Act makes it an offence to deposit poisonous wastes in areas other than those authorised.
Pollution of Waters by Oil and Noxious Substances Act 1987	Prohibits the pollution of the State's waters by specified oil-based and other toxic substances. <i>Responsible Agency:</i> Department of Environment and Land Management
Sewers and Drains Act 1954	Prohibits the flushing of hazardous substances through sewers and drains.

Northern Territory

<p>Agricultural and Veterinary Chemicals (Northern Territory) Act 1994</p>	<p>Applies the Commonwealth <i>Agricultural and Veterinary Chemicals (Code) Act 1994</i> to the Northern Territory.</p> <p><i>Responsible Agency:</i> Department of Primary Industries and Fisheries</p>
<p>Dangerous Goods Act 1988</p>	<p>Provides for the control of the manufacture, storage, transportation, use and disposal of scheduled dangerous goods, Includes industrial chemicals, explosives and pressurised containers.</p> <p><i>Responsible Agency:</i> Work Health Authority</p>
<p>Energy Pipelines Act 1982</p>	<p>Provides for the control and regulation of the construction, operation and maintenance of pipelines used for the carriage of energy producing hydrocarbons (natural gas, oil, etc.). Applies to large pipelines and specifically excludes domestic, municipal and most smaller industrial purpose pipelines.</p> <p><i>Responsible Agency:</i> Department of Mines and Energy</p>
<p>National Environment Protection Council (Northern Territory) 1995</p>	<p>Northern Territory part of the co-operative legislative scheme to establish the National Environment Protection Council pursuant to the <i>Intergovernmental Agreement on the Environment</i>.</p> <p><i>Responsible Agency:</i> Department of Lands Planning and Environment</p>
<p>Mine Management Act 1990</p>	<p>Controls and regulates the inspection and management of mines. Provides for the preparation of mine plans, management of chemicals and hazardous materials and the control of the disposal of waste products at mines.</p> <p><i>Responsible Agency:</i> Department of Mines and Energy</p>
<p>Ozone Protection Act 1990</p>	<p>Provides for the implementation of the <i>National Strategy for Ozone Protection</i>. Contains a requirement for licences to purchase and sell controlled ozone depleting substances.</p> <p><i>Responsible Agency:</i> Department of Lands Planning and Environment / Work Health Authority</p>
<p>Petroleum Act 1984</p>	<p>Provides for the control of exploration and production of petroleum through the issue of exploration and production licences. Consent conditions may specify requirement for environmental protection.</p> <p><i>Responsible Agency:</i> Department of Mines and Energy</p>
<p>Petroleum (Submerged Lands) Act 1982</p>	<p>Provides for the control of the exploration and production of petroleum from offshore areas through the issue of exploration and production licences. Schedule to the Acts sets out operational requirements and contingency planning for oil spills. This includes Clause 616—"...every reasonable precaution to prevent environmental pollution with respect to waste gas, crude oil, oil sludge and discharge formation water must be undertaken. No chemical dispersants to be used on oil spills without prior approval..."</p> <p><i>Responsible Agency:</i> Department of Mines and Energy</p>
<p>Poisons and Dangerous Drugs Act 1983</p>	<p>Controls and regulates the possession, handling, storage, sale and disposal of scheduled substances. Includes pharmaceuticals and other drugs, poisons and sundry chemicals. Licences retailers, pest control operators, manufacturers and wholesalers and registration of pesticides.</p> <p><i>Responsible Agency:</i> Territory Health Services</p>

Prevention of Pollution of Waters by Oil Act 1962	<p>This Act covers certain matters arising from the <i>International Convention for the Prevention of Pollution of the Sea by Oil</i>. The Act makes it an offence to discharge oil from a ship or place into Territory waters which comprises the sea lying within one nautical league of the coast of the Territory, including the ports and tidal waters and the navigable inland waters of the Territory. Provision is made for the recovery of clean-up costs from the master of vessel.</p> <p><i>Responsible Agency:</i> Department of Transport and Works</p>
Public Health Act 1952	<p>Provides for the control and regulation of wastes from noxious trades, the conveyance of refuse and the manner of disposal. Section 7(c) of the Act provides for the removal of public health risks to the satisfaction of the Chief Medical Officer. <i>Public Health (Nuisance Prevention) Regulation 3(d)</i> provides for health to be subject to regulation under the Act.</p> <p><i>Responsible Agency:</i> Territory Health Services</p>
Waste Management and Pollution Control Act 1998	<p>Provides for the control and regulation of contaminants or wastes being discharged, emitted or deposited into the environment. The Act adopts the penalties defined in the Environmental Offences and Penalties Act.</p> <p><i>Responsible Agency:</i> Department of Lands Planning and Environment</p>

Australian Capital Territory

Building Act 1972	<p>Allows the Building Controller to direct the removal of hazardous substances from buildings, such as asbestos.</p> <p><i>Responsible Agency:</i> Department of Urban Services</p>
Business Franchise (Tobacco and Petroleum Products) Act 1984	<p>Controls the safe use, storage and sale of petroleum products from business premises.</p>
Clinical Waste Act 1990	<p>Places extensive controls on the storage, disposal and incineration of infectious and otherwise hazardous clinical wastes.</p> <p><i>Responsible Agency:</i> Department of Urban Services</p>
Dangerous Goods Act 1975 (NSW, in its application to the ACT)	<p>Provides for the licensing of premises for the storage of dangerous goods, vehicles and vessels for the carriage of dangerous goods, the transportation of explosives, and their manufacture and sale. The Act creates offences for the unauthorised possession of explosives and empowers inspectors who may be police officers to search for and seize dangerous goods.</p>
Dangerous Goods Act 1984	<p>Provides for a licensing system for dangerous goods and prescribes the packaging and labelling required, and the marking of vehicles used for transportation of such goods.</p>
Environment Protection Act 1997	<p>Aims to provide greater protection for the environment by integrating environmental protection measures into a single and comprehensive legislative regime. The <i>Environment Protection Regulations</i> give effect to provisions of the Act by specifying standards in relation to air, ozone depleting substances, noise and water. The Regulations also prescribe controls in relation to hazardous materials and petroleum products.</p> <p><i>Responsible Authority:</i> Environment Management Authority</p>
Fertilisers Act 1904	<p>This NSW Act applies in the ACT. See comments under 1985 NSW Act above.</p>
Fuels Control Act 1979	<p>Regulates the transport, storage and sale of petroleum and other fuels in the Territory.</p>

National Environment
Protection Council 1994

ACT part in the co-operative legislative scheme to establish the National Environment Protection Council pursuant to the *Intergovernmental Agreement on the Environment*.

Poisons Act 1933

Regulates the sale, storage and use of specified poisonous substances.

Note the Commonwealth Agriculture and Veterinary Chemicals (code) Act 1994 applies in the ACT without the need for separate legislation.

**AUSTRALIA'S
MANAGEMENT
INFRASTRUCTURE FOR
INDUSTRIAL
CHEMICALS—ASSESSMENT
AND WORKPLACE
REGULATION**

This appendix is based largely on documents prepared by the National Occupation Health and Safety Commission and the National Industrial Chemicals Notification and Assessment Scheme. Their input to the National Profile is gratefully acknowledged. Contact details on contributing organisations are provided at Appendix 5.

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- 2.1 Introduction
- 2.2 Commonwealth and State responsibilities
- 2.3 The National Industrial Chemicals Notification and Assessment Scheme
- 2.4 National Occupational Health and Safety Commission

A2.1 Introduction

This Appendix expands the description of assessment and workplace regulation of industrial chemicals in Australia. To some extent, this Appendix duplicates some aspects of Chapters 3 and 4. The information in this Appendix is provided for those wishing to concentrate exclusively on, or know more about, Australia's industrial chemicals management infrastructure.

Before chemical products can be sold and used, decisions must be made that take account of any potentially adverse effects of chemicals on human health and the environment. The evaluation of potential adverse effects determines the circumstances under which the chemical can be handled, used, stored, transported, disposed of or released.

A2.2 Commonwealth and State Government responsibilities

The management of industrial chemicals in Australia is the responsibility of a number of different organisations at national and State level. Current infrastructure falls broadly into three main areas:

1. The National Industrial Chemical Notification and Assessment Scheme assesses industrial chemicals. This scheme includes a new chemicals notification and assessment program and a Priority Existing Chemicals Program which comprehensively reviews existing chemicals.
2. Regulation of workplace hazardous substances has been developed from a national model and introduced in each State and Territory to minimise the risk of adverse health effects due to worker exposure to hazardous substances. Relevant to the regulations are national standards such as exposure standards and schedules such as those for health surveillance.
3. State and Territory managed control-of-use programs aim to ensure that industrial chemicals are used safely and appropriately. These programs depend on areas 1 and 2 above and include regulatory and educational activities. The range of State programs relate to movement of dangerous goods, waste management and environmental protection, which were detailed in section 3.7 and are not discussed further.

In summary, NICNAS (section A2.3) assesses chemical entities and makes any recommendations considered necessary on any matter related to the importation, manufacture, handling, storage, use or disposal of chemicals. These recommendations are primarily addressed by regulations for workplace controls (section A2.4 on NOHSC). They are also addressed by State and Territory laws pertaining to poisons, public

health and environment as appropriate. State powers include prohibition, establishment of occupational exposure standards, health surveillance requirements as well as a range of other powers.

A2.3 The National Industrial Chemical Notification and Assessment Scheme

The operation of NICNAS has been introduced in Chapters 3 and 4. This section expands that information, concentrating on operational aspects of notification and assessment.

A2.3.1 History

Legislative control of industrial chemicals was addressed in Australia by the Commonwealth Environment Department which began developing a scheme for the notification and assessment of industrial chemicals from about 1977. In 1981, a voluntary interim notification and assessment scheme was introduced, so that industry and government could develop the administrative mechanisms, expertise and approaches required for a mandatory scheme. The Australian Environment Council published the *Discussion Paper on the Proposed National Chemicals Notification and Assessment Scheme* in June 1984 (now known as NICNAS).

Following Federal Cabinet agreement in 1984 and again in 1986, the responsibility for operation of NICNAS was transferred from the Environment Department to the National Occupational Health and Safety Commission.

A number of key issues pertain to NICNAS, which are partly based on principles recommended by the Organisation for Economic Cooperation and Development (OECD). The scheme requires manufacturers or importers of industrial chemicals new to Australia to apply for an assessment certificate and submit a package of data that will allow an objective assessment of health and safety to humans and the environment. The distinction between new and existing chemicals is made by reference to a published list of chemicals in Australia, called the Australian Inventory of Chemical Substances (AICS, 1992)—those on the inventory are said to be *existing* and others are *new* (section A2.3.3).

A2.3.2 The NICNAS legislation

Federal legislation for the Industrial Chemicals (Notification and Assessment Act (1990 became operational in July 1990. A program for assessing *priority existing chemicals* commenced in 1992 (section A2.3.5).

One key feature of the legislation is the establishment of the position of the Director of the scheme. The Director has significant powers with regard to the operation of the legislation.

The scope of the legislation covers industrial chemicals. For the purposes of this legislation, industrial chemicals are defined as substances *other than*:

- agricultural and veterinary chemicals;
- human therapeutic substances;
- food or food additives; or
- radioactive substances.

Chemicals such as dyes, solvents, plastics, and photographic chemicals, as well as some chemicals used in the home, for example, paints, cleaning agents and cosmetics, are regarded as industrial chemicals.

One further key feature of the legislation is that all manufacturers and importers intending to introduce an industrial chemical new to Australia or any product *containing* a chemical new to Australia must submit a package of information for notification and assessment.

A2.3.3 The Inventory (AICS)

The legal device which distinguishes new from existing industrial chemicals is known as the Australian Inventory of Chemical Substances (AICS).

AICS is primarily a list of chemical identity data. Any chemical not included in the AICS is regarded as a new chemical unless it is outside the scope of the Act or otherwise exempt from notification and assessment. The Inventory does not contain toxicity data, information on the chemical's use or a list of manufacturers, it is a list of chemicals with their CAS numbers. AICS comprises a list of approximately 40,000 existing industrial chemical substances.

A2.3.4 Procedures for new chemicals

A new industrial chemical must not be introduced into Australia unless the manufacturer or importer holds a NICNAS assessment certificate for that chemical. An assessment certificate cannot be provided unless the new industrial chemical has been assessed.

The data requirements required from notifiers of new industrial chemicals are detailed below.

The Assessment

The assessment process begins an evaluation of the chemical to identify data and physico-chemical properties, followed by a primary mammalian (and in-vitro) toxicological assessment, conducted by NICNAS staff, and an environment toxicology assessment by Environment Australia, with corresponding exposure assessment also being completed. These

assessments form the basis for subsequent risk assessments in the areas of occupational health and safety, public health and the environment.

Occupational health and safety—NICNAS staff conduct occupational health and safety assessments to minimise potential risks arising from worker exposure to the chemical. They also advise on safe handling practices in the workplace. The advice includes comments on the Material Safety Data Sheets (MSDS) and labels. MSDS should specify a statement of hazardous nature, company details, product identification and physico-chemical properties, health and hazard information, including first aid, precautions for use, safe handling information and a contact point for further information.

Public health—Where there is likely to be public exposure, the Department of Health and Aged Care (DHFS) assesses any public health risk for NICNAS using the toxicology report from NICNAS. They also carry out exposure assessments and determine the poison schedule classification when necessary.

The environment—The Environment Protection Group of Environment Australia also assesses risks to the environment from use of the chemical and the discharge of waste products from its manufacture or use.

Data requirements for NICNAS industrial chemical applications

Data requirements are specified in a Schedule attached to the NICNAS legislation and in the NICNAS Notifiers Handbook (NOHSC, 1990). The data is used to complete the assessment. A standard notification requires the completion of Parts A, B and C of the Schedule. For a polymer, Part D of the Schedule is also required. Reduced notification requirements are available for different categories of industrial chemicals (for example, research and development chemicals or polymers with high molecular weights).

Part A of the Schedule includes:

- a statement of which parts of the Schedule are being addressed in the notification;
- a summary of the chemical's occupational health and safety, public health and environmental effects;
- a bibliography of all references used in the notification statement.

Part B of the Schedule includes:

- identification and composition;
- uses;
- occupational health and safety exposure data;
- environmental exposure data;
- public health exposure data;

- emergency procedures;
- physical and chemical properties;
- Material Safety Data Sheets and labelling.

Part C of the Schedule includes:

- results of toxicity testing;
- results of ecotoxicity testing;
- biodegradability / bioaccumulation.

Part D of the Schedule is specific to polymers and includes:

- molecular weight;
- residual monomer(s) and impurities;
- low molecular weight species;
- stability.

Under certain circumstances a *permit*, rather than *certificate* application may be made. This does not involve such a comprehensive assessment and the chemical is not subsequently added to AICS

A2.3.5 Procedures for existing chemicals

NICNAS also provides for the assessment of chemicals already in use in Australia. In some circumstances, the use of these chemicals may lead to concern. The NICNAS legislation contains a provision to designate such chemicals as *Priority Existing Chemicals* (PEC) because of their possible adverse occupational health and safety, public health or environmental effects.

The public may nominate chemicals as candidate PEC. Chemicals which are exempt from being assessed as a new chemical and which are not listed on AICS may also be assessed under the PEC program. Nominated chemicals are screened and ranked against predetermined selection criteria. Declaration of a PEC is made by the Federal Minister for Workplace Relations and Small Business through a notice in the *Chemicals Gazette*.

PEC assessments have the further potential to focus on a particular use or circumstance. Assessments may be targeted primarily at environmental concerns or may address both human health and environmental issues. In addition, the Act allows groups of chemicals to be assessed together where it is most efficient to do so. PEC assessments may be full risk assessments or they may be preliminary assessments which focus only on use, exposure and / or specific effects.

A2.3.6 Availability of assessment reports

NICNAS compiles a series of assessment reports:

- *full assessment reports* are provided to relevant Commonwealth, State and Territory authorities and to the applicant;
- *public assessment reports* contain the full report amended to exclude any commercial in confidence material, and is provided on request;
- *summary reports* are published in the Commonwealth *Chemicals Gazette*.

Reports make recommendations which may include restrictions or precautions on manufacture or import, handling, storage, use and disposal of chemicals as well as packaging, labelling and MSDSs.

Regulatory controls, such as changes to the hazard classification and exposure standard, may be recommend. There are provisions in the Act to allow an applicant to appeal the provisions of a report.

Once finalised, an applicant is provided with a copy of the full assessment and, in the case of new chemicals, an assessment certificate, which is valid for five years. While the certificate is in force, other importers or manufacturers of the chemical must make separate application to introduce that chemical, though they can seek to arrange a certificate extension. On expiry of the assessment certificate, the chemical is listed on AICS. Once listed, an industrial chemical entity is not subject to any further new notification and assessment under NICNAS as the chemical has the status of an existing chemical.

However, if there is a significant change in circumstances related to an assessed chemical, NICNAS may specify, or require at a later date, a secondary notification of industrial chemicals which have already been assessed under the scheme. Any person who becomes aware of any change in circumstances since the initial assessment must advise the Director, and may be required to submit a secondary notification.

The NICNAS Act also provides for the protection of commercially confidential information (defined in the OECD Council Act). In all forms of notification, applications for permits, and submission of other information, certain items can be claimed to be exempt from publication. In responding to applications for exemption from publication, the Director of NICNAS must weigh the public interest against the potential commercial harm to the applicant.

A2.3.7 Compliance

Penalties for non-compliance can be enforced under the NICNAS legislation. Penalties exist for the deliberate introduction of a new industrial chemical which is subject to notification; contravention of a condition of a permit which has been granted to import or manufacture a

chemical for commercial evaluation; or contravention of a condition of a permit for a low volume chemical.

A range of penalties exist with respect to priority existing chemicals, for example, for failing to apply for an assessment of a declared chemical, or failing to comply with the notice for importers and manufacturers to provide relevant information prior to the declaration of a PEC. There are also a range of penalties for non-compliance with secondary notification.

NICNAS provides for an inspectorate which is empowered to collect information regarded as being necessary to enable an adequate assessment.

A2.3.8 Company Registration

Compliance is supported by a recently introduced program of company registration. The *Register of Industrial Chemicals Introducers* was established on 9 July 1997 to fund NICNAS, support compliance activities, educate and raise awareness of the activities of NICNAS. An *Introducer* is considered to be anyone who imports or manufacturers relevant industrial chemicals, which may be existing chemicals listed in the AICS, or new chemicals that require notification.

Companies who import or manufacture industrial chemicals having greater than the prescribed threshold value of A\$ 500,000 are required to register annually with NICNAS. An annual application fee and registration charge is payable.

A2.4 National Occupational Health and Safety Commission

One of the main purposes of industrial chemicals assessment and notification is to identify hazardous substances proposed for use in the workplace. The National Occupational Health and Safety Commission (NOHSC) is responsible for the safe management of industrial chemicals in the workplace.

Hazardous Substances, primarily but not exclusively industrial chemicals, are regulated by the NOHSC through the National Hazardous Substances Regulatory Package.

A2.4.1 The National Hazardous Substances Regulatory Package

In 1993, NOHSC declared a package of regulations, standards and codes of practice known as the National Hazardous Substances Regulatory Package (see attached diagram at the end of this Appendix)). The

Package is a blueprint for the legislative control of hazardous substances used in the workplace.

Commonwealth, State and Territory governments have or are in the process of enacting hazardous substances legislation, based on the National Regulatory Package. In 1998-99 it is anticipated that Victoria and Tasmania will complete the nationwide implementation of this legislation, thereby providing a national approach to the control of hazardous substances in the Australian workplace.

The centrepiece of this Package is the *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)]. The national model regulations apply to all workplaces in which hazardous substances are used or produced, and to all persons with potential exposure to hazardous substances in those workplaces.

The two principal components of the National Model Regulations are:

- *information provisions*, which address the delivery of specific information, for example, labels and Material Safety Data Sheets (MSDS) that the supplier of a workplace hazardous substance has to provide through the employer to employees. These provisions also ensure that employee representatives, relevant public authorities and emergency services are provided with access to pertinent information as well;
- *assessment and control provisions*, which require employers to identify hazardous substances in the workplace, make an assessment of those hazards arising out of the work activity, and then take appropriate control action.

The National Model Regulations include schedules for substances which are prohibited for specified uses (Schedule 2), and substances for which health surveillance is required if the assessment process shows there is a significant risk to the health of the employee (Schedule 3).

The *National Code of Practice for the Control of Workplace Hazardous Substances* [NOHSC:2007(1994)] provides a practical guide on how to comply with the national model regulations.

The National Model Regulations require manufacturers and importers to determine whether a substance is hazardous to health before supplying it. They are also required to provide, for all hazardous substances, labels and MSDS containing information about the hazards of these substances.

Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (1994)] is a national standard for determining whether a substance is a hazardous substance, and to assist in preparing labels and MSDSs. It is based on the classification system used in the European Communities.

A list of the more common substances, which meet the criteria, is contained in *the List of Designated Hazardous Substances*

[NOHSC:10005(1994)]. The list provides guidance on appropriate risk and safety information for the label and MSDS.

The National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)] is a flexible system of labelling whereby manufacturers and importers can meet the labelling requirements of the National Regulations and other national systems (for example, the Australian Code for the Transport of Dangerous Goods by Road and Rail, and the Standard for the Uniform Scheduling of Drugs and Poisons).

The National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)] provides guidance on the preparation of a MSDS to enable manufacturers and importers to meet their responsibilities. The Code recognises certain overseas MSDS formats that provide equivalent or a better standard of information.

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1994)] provide a guide to the control of exposure in the workplace.

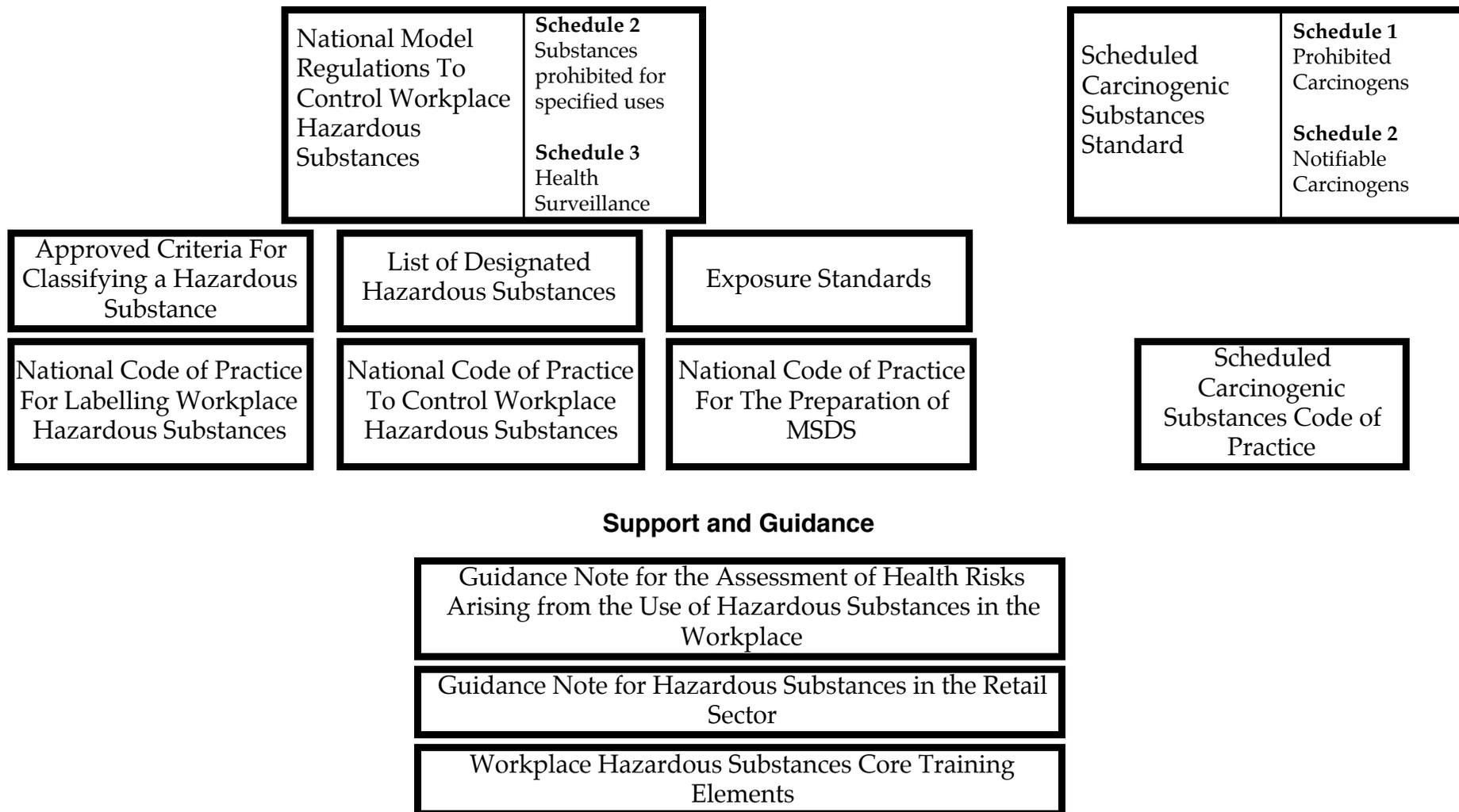
The National Model Regulations for the Control of Scheduled Carcinogenic Substances [NOHSC:1011(1995)] and *the National Code of Practice for the Control of Scheduled Carcinogenic Substances* [NOHSC:2014(1995)] provide more stringent requirements for the management of identified high risk workplace carcinogens. The regulations contain two schedules:

- Schedule 1 lists substances which are prohibited except for use in research and analysis;
- Schedule 2 lists substances which require notification of use to the relevant public authority.

A variety of guidance material has been prepared to support the National Hazardous Substances Regulatory Package, including:

- *National Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances in the Workplace* [NOHSC:3017(1994)]
- *National Guidance Note for the Control of Workplace Hazardous Substances in the Retail Sector* [NOHSC:3018(1994)]
- *Core Training Elements for the National Standard for the Control of Workplace Hazardous Substances* (1995).

Figure A2-1: Hazardous Substances Regulatory Package



3

Appendix

AUSTRALIA'S MANAGEMENT INFRASTRUCTURE FOR AGRICULTURAL AND VETERINARY CHEMICALS

Please note that this Appendix is largely a direct extract of Appendix III of the Management of Agricultural and Veterinary Chemicals: a National Strategy (1998, ARMCANZ), and its contribution to the National Profile is gratefully acknowledged. The strategy itself is a forward looking document which seeks to take Australian agricultural and veterinary chemicals management into the new millennium, whereas the National Profile attempts to benchmark Australia's current status. The complete text of the strategy can be obtained from the Department of Agriculture, Fisheries and Forestry, whose contact details are provided in Appendix 5.

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- 3.9 Research and development
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A3.1 Introduction

This appendix serves to provide a summary of the management infrastructure for agricultural and veterinary chemicals in Australia. It, to some extent, duplicates aspects of Chapters three to six but provides a more detailed discussion. This information is provided in this appendix for those wishing to concentrate exclusively on or know more about Australia's agricultural and chemicals management infrastructure.

Before chemical products can be sold and used, decisions must be made that take account not only of commercial considerations, but also the potentially adverse effects of chemicals on human health and the environment. The decisions are interrelated and complex and, for this reason, ag/vet chemicals are regulated in most countries. The overall principle guiding Australia's current chemicals management system is to reduce risks to human health, the environment, trade and production to an acceptable level.

A3.2 Commonwealth and State government responsibilities

The management of ag/vet chemicals in Australia is the responsibility of a number of different organisations at Commonwealth and State level. This separation is partly the outcome of the Australian Constitution, and partly a reflection of the diversity of Australian agriculture, climate and land types. Current activities fall broadly into five main program areas:

- The National Registration Scheme assesses the suitability of agricultural and veterinary chemical uses and regulates the manufacture and supply of ag/vet chemicals up to the point of retail sale. This scheme includes an Existing Chemicals Review Program which comprehensively reviews older chemicals with a view to identifying and managing any problems that have emerged since their initial registration, and a Special Review Program for reviewing specific aspects of chemicals if problems arise.
- State-run control-of-use programs which aim to ensure that agricultural and veterinary chemicals are used safely and appropriately. These programs include regulatory (for instance enforcing label instructions), information and educational activities.
- Residue monitoring programs to ensure that agricultural produce meets national and international standards and the needs of the market place with respect to residues.
- Research and development programs run at the national, State and industry levels, with the general aim of improving the efficiency of pesticide use, reducing our reliance on chemical pesticides for pest and

disease control, and developing Best Management Practices (BMPs) to minimise any unintended impacts of pesticides and other chemicals.

- Regulation of workplace hazardous substances which has been developed from a national model and introduced in each State and Territory to minimise the risk of adverse health effects due to worker exposure to hazardous substances, including hazardous ag/ vet chemicals. Relevant to the regulations are national standards such as exposure standards and schedules such as that for health surveillance.

The main vehicle for Commonwealth/State government coordination in agriculture is the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), which is a regular meeting of Ministers. ARMCANZ has a subsidiary committee structure based on the Standing Committee on Agriculture and Resource Management (SCARM), which is made up of heads of government departments.

Under SCARM there is a hierarchy of committees specifically charged with responsibility for progressing policy matters of concern to both Commonwealth and State governments. Primary carriage of ag/ vet chemical issues rests with the Agricultural and Veterinary Chemicals Policy Committee (AVCPC). This committee includes representation from other Commonwealth/State committees with responsibility for environmental, occupational health and safety, public health and forestry interests in addition to agricultural and veterinary interests.

A3.3 The role of non-government organisations

Diverse non-government organisations are involved in or concerned about the use of ag/ vet chemicals in Australia. These range from chemical manufacturers to consumers, and include a variety of organisations attending to different facets of ag/ vet chemical use and its consequences. Environmental, public health, and occupational health and safety groups have key roles to play in promoting the public interest and in providing checks and balances to the industry and government bodies. Other interest groups representing farmers, producer groups and exporters are also influential in ensuring that management decisions on the use of chemicals take into consideration trade and occupational health and safety implications.

There are a number of peak ag/ vet chemical industry organisations in Australia:

- National Association for Crop Protection and Animal Health (Avcare);
- Veterinary Manufacturers and Distributors Association (VMDA);
- Plastics & Chemical Industries Association (PACIA);

- Australian Chemical Specialties Manufacturers Association (ACSMA) and the Aerosols Association of Australia (AAA) represent most manufacturers and distributors;
- Australian Environmental Pest Managers Association (AEPMA) represents many urban pest controllers;
- Aerial Agricultural Association of Australia (AAAA) is the peak organisation for the aerial crop protection industry.

3.4 Joint government/industry bodies

SAFEMEAT, formerly known as the Residue Management Group (RMG) provides industry leadership and strategic direction on the handling of residue issues in the red meat sector. Operating under ARMCANZ and Australia's peak meat industry body, it coordinates joint government and industry efforts to improve domestic and international approaches to the handling of residue matters.

3.5 National Registration Scheme for Agricultural and Veterinary Chemicals

The National Registration Scheme for Agricultural and Veterinary Chemicals is a single assessment and regulation system for such chemicals. The scheme became fully operational on 15 March 1995 and replaced the pre-existing State and Territory systems. The main vehicle for the administration of the National Registration Scheme is the National Registration Authority for Agricultural and Veterinary Chemicals (NRA), which is established under the auspices of the Agricultural and Veterinary Chemicals (Code) Act 1994, the Agricultural and Veterinary Chemicals (Administration) Act 1992, and relevant State legislation.

The Agricultural and Veterinary Chemicals Code is a schedule to the Agricultural and Veterinary Chemicals (Code) Act 1994. The Code is what is incorporated into the State and Territory legislation by means of complementary adoptive legislation (Appendix 1). The NRA is funded from both a levy on ag/vet chemical product sales in excess of \$100,000 per annum and fees for registration, re-registration and permits.

The legal powers of the NRA derive almost entirely from the States and Territories. Although the NRA was created as a statutory authority by the Commonwealth, the States agreed to allow the NRA to administer certain powers on their behalf. The powers of the NRA are mainly conferred through State Acts of Parliament which directly refer to the NRA.

The NRA is responsible for regulation of the manufacture, distribution and supply of ag/vet chemicals up to and including the point of retail sale. Under the legislation, the Board of the NRA must include members

with experience in primary production, industry, occupational health and safety, and consumer protection, helping to ensure that all interests are taken into account within the regulatory system.

Under the National Registration Scheme, all ag/vet chemicals have to be registered by the NRA before they can be supplied or sold in Australia. The registration process is a rigorous one which involves an evaluation of each chemical's safety to humans and the environment, its safety to non-target plants or animals, its efficacy and impact on trade. The output of this process is a label which provides user directions that are designed to minimise impacts on health and the environment for the proposed use of the chemical and which are based on good agricultural practice at that time. Any product deemed to be of high risk will either not be registered or will have restrictions placed on its use which will be communicated to users via the label. The instructions provided on the label are enforced beyond point of sale by State and Territory legislation (Appendix 1).

Processes for approving off-label uses are also provided and are a means for evaluating and approving uses not covered by the label. Where required, under State/Territory legislation, the NRA controls links with State/Territory Control of Use programs to provide a process for evaluating and approving off-label uses via a permit system. These specify allowable variations in the use of ag/vet chemicals.

The NRA has legislative responsibility for the assessment of ag/vet chemical products and in doing so works co-operatively with other Government agencies. In its assessments, it seeks advice on an open and transparent basis in the following areas:

- **Health**—from the Commonwealth Department of Health and Aged Care, which evaluates the human toxicology of the product and determines poison schedule classification and first aid and safety directions.
- **Occupational health and safety**—from Worksafe Australia (National Occupational Health and Safety Commission), which evaluates the product from an occupational health and safety viewpoint and determines safe handling and use practices in the workplace (at manufacturing, distribution and end-use levels), including the need for protective clothing.
- **Environment**—from Environment Australia's Environment Protection Group, which assesses the environmental toxicology, chemistry and fate, and makes recommendations to the NRA on how the potential environmental impact of the chemical's use can be minimised.
- **Efficacy**—from State departments of agriculture/primary industries, which evaluate the product's efficacy with respect to target plants and animals.
- **Trade and commerce**—from Department of Agriculture, Fisheries and Forestry and Growers Association.

- *Current and good agricultural practice*— from State departments of agriculture/primary industries.

The NRA has power to deregister, or impose additional restrictions on the use of any ag/vet chemical product if new information comes to light which questions the safety of that product or the database is inadequate. Numerous products have been withdrawn or have had severe restrictions placed on their use in recent years under those provisions (for example, persistent organochlorines, mercurial fungicides, dithiocarbamates such as ferbam, maneb and nabam, and nitrofurans). This is enforced through a two-way information flow between the NRA (providing recommendations) and State authorities (providing enforcement).

This activity is completed by a range of programs illustrated by the Existing Chemical Review Program (ECRP). The ECRP is a newly initiated program which commenced in late 1996, and provides for the comprehensive review of registered ag/vet chemicals. Since that time it has commenced review of twelve chemicals, finalised three reviews (mevinphos, atrazine and endosulphan), and has another three close to completion. To complement the ECRP, which is exhaustive and wide ranging, NRA also conducts special reviews which tend to focus on particular applications of or concerns with certain products. In 1996-97, 19 reviews were progressed, 14 were proposed and 8 were completed with:

- phenothiazine deregistered;
- vinclozolin, registration of currently formulated products cancelled;
- propazine, registrations continued;
- ethylene dibromide, to be withdrawn by June 1999;
- tribufos, registration, voluntarily withdrawn;
- chlorpropham, registration conditions revised but continued;
- metham sodium and dazomet, registration conditions revised to meet OH&S concerns.

The NRA also undertakes efficacy assessment for selected products, chemical evaluation, and the evaluation of the significance of residues in food. The NRA recommends maximum residue limits (MRLs) to the Australia New Zealand Food Authority (ANZFA), which assesses the dietary exposure resulting from the use of ag/vet chemicals. If acceptable in terms of risk to public health, ANZFA makes recommendations to the Australia New Zealand Food Standards Council (a Council of Health Ministers) for the establishment of a new MRL. If approved, the MRL is incorporated in the Food Standards Code which, in turn, is incorporated into State and Territory food legislation. In general, assessments are based upon data supplied by the applicant and submissions received during public consultation.

Compliance with the provisions of the Agricultural and Veterinary Chemicals Code, up to and including the point of retail sale for ag/vet chemicals is through a national compliance program operated by the NRA. The Act provides for strict penalties for non-compliance.

A licensing scheme for manufacturers of veterinary drugs is also administered by the NRA to ensure veterinary manufacturers meet 'good manufacturing practice' (GMP) standards. A Mutual Recognition Agreement (MRA) was established in 1998 between Australia and the European Union whereby veterinary chemicals manufactured in Australia in accordance with a Code of GMP recognised by the EU (which is the European Code of GMP), will be accepted in the EU without further GMP audit and testing by European member countries with reciprocal arrangements with Australia. The MRA has a two year phase in period.

A3.6 State control-of-use programs

The States and Territories are responsible for controlling the use of ag/vet chemicals once they have been sold, and for guiding users on the use of ag/vet chemical products. The activities of the States and Territories complement the activities of the NRA and fall broadly into two areas outlined below.

Research, extension and educational activities

All States and Territories have research, extension and education activities aimed at reducing the risks from ag/vet chemical use and improving the efficiency and effectiveness of such use. These activities include:

- extension/promotional programs on safe, effective and approved use of pesticides, aimed primarily at growers;
- development and promotion of integrated pest management (IPM) techniques;
- development and promotion of innovative production techniques to reduce the need for pesticides; for example, out-of-season production, hygiene, rotations;
- promotion and involvement in the generation of efficacy and residue data for quarantine treatments;
- accredited training programs (for example, Farmcare), usually run in association with professional course providers and relevant industries, on safe handling and effective use of pesticides, aimed at farmers, commercial operators, and retailers;
- development and promotion of more cost-effective application rates and improved application technology; and
- informing members of the public.

Most of these programs are joint exercises involving State departments of agriculture/primary industries, environment departments, grower organisations, industry groups and educational institutions.

Regulatory activities

States and Territories are responsible for enforcing controls over the use of ag/vet chemical products, including licensing of commercial pest control operators, ground and aerial spray operators and pilots. Activities include the investigation of, and appropriate action for adverse incidents such as spray drift and poisoning of wildlife. States and Territories also follow up violations detected through agricultural produce residue monitoring programs.

A3.7 Residue monitoring

Australia has a number of residue monitoring programs to ensure that agricultural produce meets both national and international standards covering ag/vet chemical residues. They include the following five.

The National Residue Survey

The National Residue Survey (NRS) is conducted by the Commonwealth Department of Agriculture, Fisheries and Forestry's Bureau of Resource Sciences and is fully funded by participating industries. The NRS monitors chemical residues in Australian raw food commodities. Programs include both domestic and export market segments. NRS monitors ag/vet chemicals used in the production of meat, grains, honey, fruit, vegetables, nuts and seafood. Since December 1996, it has been compulsory for meat from all species slaughtered for export or domestic use in Australia to be tested by NRS, under the Australian Standard for the Hygienic Production of Meat for Human Consumption. This involves testing for some 90 chemicals.

Heavy metals, and organochlorines such as DDT that may still be present in the environment as a result of past use by industry, are also surveyed as environmental contaminants within these programs. NRS surveys provide a snapshot of the chemical residue status of agricultural commodities. Data produced are increasingly used by industries to validate their quality assurance programs, to provide important underpinning for Australian export programs, and are also used to support the Australian position in international forums such as the OECD, and with trading partners like the European Union.

Other national testing programs

Targeted testing programs with a focus on red meat have been developed under the auspices of the SAFEMEAT in conjunction with the Australian Quarantine Inspection Service (AQIS), the States, the NRA and industry,

to meet particular monitoring needs of chemical residues that pose a high risk or a potential risk to Australian export markets. Major programs are:

- National Organochlorine Residue Management (NORM);
- National Antibacterial Residue Minimisation (NARM);
- Hormonal Growth Promotants Audit Program (HGP);
- Chlorfluazuron (CFZ) and Endosulfan Survey.

The NRS has a role in managing and coordinating the programs, receiving and collating the results, making payments to State governments, laboratories and abattoirs, and auditing the operational and financial aspects of these programs.

State testing programs

States conduct their own residue testing, as do some commodity-focused organisations. These are generally targeted testing programs designed to identify failings in agricultural practice, chemical product quality, problems with MRLs and other matters, and are used to facilitate corrective action.

The Australian Total Diet Survey

The primary focus of the Australian Total Diet Survey (formerly the Australian Market Basket Survey) conducted by ANZFA is to estimate the dietary intakes of a range of pesticides and contaminants. Over 70 foods are analysed in the Total Diet Survey, and diets consisting of these foods are constructed, based on food consumption data from national dietary surveys (1995 National Nutrition Survey, ABS/Department of Health and Aged Care; 1983, 1985 National Dietary Surveys, Department of Health).

The foods are prepared to a table-ready state and are individually screened for organophosphates, organochlorines, pyrethroids, dithiocarbamates, antimony, arsenic, cadmium, copper, lead, mercury, selenium and zinc. Other toxicologically active contaminants such as aflatoxins, herbicide residues, tin and aluminium have been analysed in selected foods.

This is a small survey in terms of numbers of samples, but useful because measurements are made on table-ready food.

ANZFA refers to the results from the Survey when developing food standards for the Food Standards Code and for projects such as revising the maximum permitted concentrations (MCPs) of lead or cadmium in foods. Total diet surveys can provide the most accurate estimates of dietary exposures for ag/vet chemicals and contaminants currently found in the food supply and can be used to evaluate the success of risk management procedures currently in place or to highlight the need for further procedures.

Activities of marketing organisations

Some commodity-focused organisations conduct their own residue surveys, primarily with the aim of quality assurance. A brief description of three such programs follows.

Australian Wheat Board—the AWB surveys residues as part of its quality assurance program. The AWB is concerned mainly with pesticide levels in grain after harvest, although it also monitors fungicides and heavy metals before harvest. Residue samples are taken to ensure that customer requirements (including overseas and domestic government authorities) are met. In addition to meeting international MRLs, the AWB has set its own (tighter) standards to ensure that market requirements are met.

Australian Wine and Brandy Corporation—the AWBC undertakes residue surveys to ensure that their product has residues below international MRLs important in trade, and to ensure that product is 'pure and clean', consistent with Australia's international reputation.

International Wool Secretariat—the IWS monitors pesticide residue levels in the Australian wool clip by testing 600 samples taken at random from sales lots around Australia each year, and has been doing so since 1992. These samples are used for monitoring purposes only.

A3.8 Quarantine and inspection services

The Australian Quarantine and Inspection Service (AQIS) is the Commonwealth body responsible for inspecting Australian exports of primary produce, and foods imported into the country. Virtually all bulk agricultural produce exported from Australia is inspected by AQIS. This includes meat, dairy products, seafood, grains, and fruit and vegetables. The inspection activities include ensuring that export premises meet required standards, that product description, labelling and documentation are in accordance with regulations, and that the requirements of importing countries and Australian statutory marketing authorities are met.

In the case of imported foods, all are liable to inspection and sampling, at varying rates, by AQIS. All imported foods must comply with the Australian Food Standards Code. Analysis, where required, is carried out by Australian Government Analytical Laboratories (AGAL). These laboratories provide a wide range of testing services to primary producers, the rural sector and associated environmental areas. The testing services include analysis of meat, fish, fruit, vegetables, wine, honey, dairy products, eggs, grain, soil, water and sludge. Such testing could be for nutritional labelling, compliance with Federal, State, Territory or local government health, environmental and agricultural regulations, or to meet export requirements. AGAL analyses, which are

backed by the Australian Government, are of special significance to goods bound for the overseas market as AGAL testing certificates are accepted by our trading partners.

A3.9 Research and development

A large program of research and development is conducted by various national and State organisations. This is done by State departments responsible for agriculture and resource management, in cooperation with national research organisations such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the universities, as well as the chemical manufacturers. Research is also undertaken in specific subject areas by Co-operative Research Centres (CRCs), which have been established as a result of joint government/industry initiatives. In addition the Australian Centre for International Agricultural Research (ACIAR) funds Australian and developing country scientists to undertake collaborative research of mutual benefit on agricultural and natural resource management problems.

Research is also initiated through industry Research and Development Corporations (RDCs) which allocate funds raised from specific industries by means of levies, and matched by the Commonwealth Government, to specific research projects. These organisations have been established to cover the following industries: cotton, dairy, dried fruits, egg, fisheries, grains, grape and wine, honeybee, horticulture, land and water resources, meat, pig, sugar, tobacco, wool, and forest and wood products.

The **CSIRO** is the Commonwealth Government's major scientific research organisation. Research into agriculture and natural resources is conducted in many divisions of CSIRO, which

- produces a range of scientific and general interest publications;
- conducts research for the development of new products and their alternatives, including breeding resistant crops, IPM and biological control of pests and weeds;
- develops technologies for environmental monitoring and impact assessments;
- undertakes strategic research into pests and diseases of plants and animals, and manages the Australian Animal Health Laboratory.

The **Bureau of Resource Sciences (BRS)** is a professional independent scientific bureau within the Commonwealth Department of Agriculture, Fisheries and Forestry. It frequently provides scientific and technical information about resource assessment issues that affect the agricultural, forestry, fishing, mining and petroleum industries. The Bureau is responsible for several government programs, including the National

Residue Survey, the National Forest Inventory, and the National Resource Information Centre.

A3.10 Adverse experience reporting

Reporting of adverse experiences that may be linked to contact with ag/vet chemicals is an integral part of the regulatory system for ag/vet chemicals.

A system for reporting adverse experiences with veterinary chemical products is operated by the NRA. This system has two components: *mandatory* reporting, where manufacturers are required to report annually on any adverse experiences brought to their attention, and *voluntary* reporting by veterinarians, farmers and animal owners. All reports are recorded and, following investigation, regulatory or other action with manufacturers may be undertaken.

A reporting system for adverse experiences that may be linked to agricultural chemicals has yet to be developed. Such a system would involve a range of government, community, industry and rural sector stakeholders. Any proposal would need to be considered by both the Health and Primary Industry Ministers before it could be developed and implemented. The NRA is aiming to develop such a proposal for a national adverse experience reporting program for agricultural chemicals. Consideration is at a very early stage as to whether a similar scheme for adverse experiences to wildlife is also justified.

A3.11 Management of unwanted chemicals and containers

Efforts to establish a coordinated national scheme for disposal of ag/vet chemical containers are continuing. In the early 1990s AVCARE initiated a national program to deal with this issue, which it is continuing to develop. More recently, the peak environmental Ministerial body, the Australia and New Zealand Environment and Conservation Council (ANZECC), has approved a National Strategy for the Management of Unwanted Empty Farm Chemical Containers which picks up on much of the pioneering work of AVCARE, including its *Clean Rinse* campaign.

The phase-out of persistent organochlorine pesticides (OCPs) has left stores of these chemicals on farms, business premises and households around Australia. In 1994 ANZECC formed a National Advisory Body consisting of representatives drawn from farmers, unions, environment groups, local government and various industry bodies, to advise it on the development and implementation of national plans for the management of scheduled wastes, including OCPs. Concurrently, ANZECC formed the Scheduled Wastes Management Group (SWMG), made up of senior government environment officials, to oversee the development of

management plans for scheduled wastes. Together they have developed a draft management plan for OCPs which is currently being finalised.

Another related but separate matter is the disposal of other unwanted chemicals, other than residues, remaining in containers. A Steering Committee established jointly by ANZECC and ARMCANZ is currently looking at options for dealing with unwanted farm and household pesticides. The task of the Steering Committee is to establish a nationally coordinated, cost-effective scheme for the collection, storage and destruction of historical stocks of unwanted farm and household pesticides. The committee is also to establish a strategy for the proper management of future unwanted farm and household chemical wastes.

Appendix

4

**KEY INFORMANTS STUDY
UNDERTAKEN TO
ESTABLISH PRIORITY
CONCERNS RELATED TO
CHEMICAL PRODUCTION,
IMPORT, EXPORT AND USE**

A4.1 Introduction

The National Coordinating Team responsible for advising on the Australia Profile agreed that a survey of experts in chemicals management was an important step in identifying and characterising problems associated with chemicals production, import, export and use.

A *Key Informants* study was commissioned, in preference to a probability sampling technique. The rationale for this was that qualitative information was required, and that the extent of the population of experts would be difficult to define, making systematic sample selection problematic¹.

It is important to note that this key informants study complements a number of other investigations into:

- public perceptions of the chemicals and plastics industries (Open Mind Research Group, 1996);
- attitudes of opinion leaders to the chemical and plastics industries (Open Mind Research Group, 1995);
- community attitudes towards the use of farm chemicals (Dangar Research Group, 1992);
- farmers' attitudes towards agricultural chemicals (Rural Development Centre, 1993).

In addition, an evaluation of the effectiveness of the National Strategy for the Management of Scheduled Waste is in progress, and this will provide further assessment of infrastructure. More general surveys of public opinion about environmental issues are available, and these contain findings relevant to chemicals management. An example is the recent study commissioned by the NSW EPA (Taverner Research Company, 1997). The Key Informants study was seen as a helpful adjunct to these other studies, in establishing the priority concerns relating to chemicals management.

¹ There has been much discussion in the social science literature of interview techniques suitable for obtaining qualitative information. For example, Shipman (1988) and Babbie (1992) have described the benefits and limitations of the 'key informants' approach. Also known as 'purposive' or 'judgemental' sampling, the validity of the technique relies on the prior assessment by the analyst(s) that particular members of a broader population (in this case experts on chemicals management) are likely to provide representative opinions which will meet the purpose of the study (Babbie, 1992). The most important limitation of the technique is that there is no way to determine whether the sample does in fact represent the overall population unless a representative sample (eg randomly selected) of that population is studied and its characteristics compared with those of the purposive sample (Chadwick et al, 1984). Despite this difficulty, the technique is favoured in circumstances where a strong prior understanding of the survey population has been developed through extended observation and reflection (Babbie, 1992).

A4.2 Methods

An important aspect of the study reported here is that the judgement concerning the selection of the sample was made by the National Coordinating Team responsible for oversight of the project. This team is itself made up of chemicals management experts, with extensive collective experience, drawn from the major constituencies with an interest in chemicals management. The team used the following criteria in recommending informants:

- Informants should have long standing experience with chemicals management, to the extent that they can identify and provide information about national priorities.
- A balance should be maintained between the number of representatives of government departments, environment groups and industry. The rationale for this is that these constituencies typically adopt different positions in controversies over chemicals management.
- For government participants, it was also considered important to give representation to environment, health, and industry departments and to statutory authorities and interdepartmental bodies.
- There should be a reasonable spread of representation across all states. This is considered essential because Australian chemicals management is conducted through both national instruments and individual state based mechanisms.

Thirty nine interviews were conducted. This included two joint interviews; therefore a total of forty one experts took part². Another four were nominated, and of these, three were unable and one unwilling to take part. Each State and Territory was represented, and experts with nationwide and state-based positions took part. There were almost equal numbers of government and non-government participants. Table A4–1 shows the affiliations and geographic location of those interviewed.

Table A4–1: State/Territory and affiliation of Key Informants

Affiliation/State	ACT	NT	NSW	QLD	SA	TAS	VIC	WA	Total
Environment groups	1		3	1			2	1	8
Federal Government	7		1						8
State/Territory Government		2	1	1	2	3	2	1	12
Industry (companies, peak groups)			4				3	1	8
Industry (peak user groups)			3						3
Industry (trade unions)							2		2
Total	8	2	12	2	2	3	9	3	41

² The sample size is comparable with a recent qualitative survey into the attitudes of opinion leaders to the chemical and plastics industries, a survey in which interviewers spoke with 38 key informants, again spread across a range of affiliations (Open Mind Research Group, 1995).

Interviews were conducted by phone in 1997 by two researchers knowledgeable about chemicals management. Interviewees received a set of guidance questions in advance (Attachment A4–1). These questions were proposed by the researchers in consultation with members of the National Coordinating Team³.

The principal line of inquiry was to ask participants to identify, then characterise up to five issues that they regard as highest priority (Questions 1 and 2). A prompt list of issues (see Question 1) was extracted from a United Nations guidance document (UNITAR, 1996), although respondents were invited to nominate other concerns if they preferred. As discussed below, about one quarter of the respondents found the prompt list too limiting, and preferred to address what could be termed ‘structural issues’ rather than discrete problems related to the impacts of chemicals use (section A3.6 for clarification).

A4.3 Overview of Results

One expectation of the survey was that participants would give emphasis to those problems that fall within their immediate professional interests, or problems that were ‘top of the mind’. However, certain problems were given emphasis across all sectors and independent of affiliation, allowing the broad ranking given in the following tables to be made. In this limited way, the survey has allowed judgements to be made about relative strength of experts’ concerns about national problems.

However, interpretations arising from this key informants study, which appear below, can not be taken as the view of the Australian Government, or of any other sector involved in the study. While the comments show the scope of concerns over chemicals management, further analysis would be necessary if priorities for action by governments and industry are to be determined.

There were two general types of response to questioning about priority concerns.

- The majority of informants adopted the approach suggested by the questionnaire, exploring chemicals management through a set of discrete problems to be solved (for example: ‘disposal of hazardous waste’, or ‘accidents during transport’). This type of response is shown in Table A4–2 (which lists problems identified) and Table A4–3, which characterises those problems judged to be of concern. The scope and layout of these tables have been adapted from United Nations guidelines for a national profile (UNITAR, 1996).

³ Interviews lasted approximately one hour. Each interviewer conducted approximately half the number of interviews, and spoke with representatives of each of the stakeholder groups. The researchers held their own briefings to ensure consistent approaches to questions.

- About twenty-five percent of key informants chose not to take this ‘problem solving’ view of chemicals management, and preferred to give a critique of the underlying frameworks and pre-conditions for chemicals management. These informants regarded specific problems such as those in Tables A4–2 and A4–3 as symptoms of broader structural concerns. Issues such as ‘poor public understanding of the benefits of chemicals’ or ‘lack of commitment to source reduction’ were typical of this style of response. Section A3.6 elaborates some of the issues identified in this way.

Section A3.7 presents further analysis of the survey response, and provides a discussion of differences in problem perception amongst concerned parties. The National Coordinating team requested such an evaluation to help identify gaps in chemicals management infrastructure.

A4.4 Problem identification

Table A4–2 lists problems identified by key informants, and the frequency with which those problems were identified and given emphasis in interviews. This table does not include responses that concern broad structural issues, which are considered in Section 3.6.

A ranking was then allocated to each problem by the number of times it was identified by informants⁴. (Some key informants indicated more than one problem.) Priority rankings by the forty five key informants were assigned as follows:

- **Ranking 1:** These problems were given emphasis by at least ten experts in a survey of forty one key informants;
- **Ranking 2:** These problems were given emphasis by four or five experts in a survey of forty one key informants;
- **Lower level ranking:** These problems were given emphasis by up to three experts in a survey of forty one key informants.

Further ranking was considered unwarranted.

⁴ This approach provides a general guide to the priorities of the whole field of chemicals management experts. For another analysis using a similar approach, see the New South Wales Environment Protection Authority’s recent publication *Who Cares About the Environment in 1997* (NSW EPA, 1997). In this case the field is not chemicals experts, but the general public.

Table A4–2: Identification and prioritization of problems

Ranking	Problems	Frequency
1 Highest level of concern	hazardous waste treatment and disposal	14
	storage and disposal of obsolete chemicals	10
	pollution of inland waterways	10
2 Second highest level of concern	occupational health - agriculture	4
	chemical accidents during transport	5
	chemical residues in food	4
	air pollution	4
	soil contamination	5
3 Lower level of concern	groundwater contamination	2
	drinking water contamination	2
	chemical storage - accidents and leaks	1
	chemicals imports - unknown formulations	3
	occupational health - industry	3
	chemical poisoning and suicides	2
	wildlife contamination	1

Comment on Table A4–2:

A feature of the survey results is that half the respondents nominated as priority concerns either treatment/disposal of hazardous waste or storage/disposal of obsolete chemicals, and several of these respondents nominated both issues. There is considerable overlap between the two concerns; indeed by many definitions, obsolete chemicals can be regarded as 'hazardous wastes' (Hazardous Waste Technical Group, 1997). Australia has followed a unique path in the management of hazardous wastes, with attempts to install high temperature incineration failing in the early 1990s, in part due to community concern. Subsequent investigation of alternative disposal options has produced several processes which are regarded as commercially viable. Implementation of the Basel Convention (on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal) has all but removed the possibility of export of hazardous wastes (including obsolete chemicals). These developments have been interpreted in markedly different ways by industry on the one hand, and environment groups on the other, and as indicated in the following section, these differences in perspective are apparent amongst the survey participants. For the chemical industry and some government respondents, the problem of hazardous waste will be solved when commercially viable means of disposal have been developed and accepted by the Australian community. For environment groups, the solution lies in toxic use reduction.

A4.5 Problem characterisation

Table A4–3 provides details of priority concerns as encountered in the survey of chemicals management experts. In describing problems and summarising management needs, an attempt has been made to incorporate the diverse perceptions of survey respondents.

Table A4–3: Priority concerns related to chemicals management

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Ranking 1: Problems with highest level of concern							
Hazardous waste treatment and disposal (with containers as special case)	14	National scale; Focus on key production sites, mining areas, and areas of intensive agriculture	Commercially viable technical alternatives to high temperature incineration yet to be proven and accepted, though research well under way for selected chemicals; waste export prohibited as an option under Basel Convention; specialist landfills not easily accessible in all states; collection of waste a problem in rural areas; managed storage and <i>ad hoc</i> accumulation increasing; container collection programs sporadic, with no compulsion to recycle drums; poor uptake of source reduction programs	Waste farm chemicals, chlorinated solvents and solid waste, heavy metals, medical wastes, mining wastes	High amongst experts from all sectors; disposal of chemical waste rated as the issue of highest concern in three successive studies of public attitudes to the chemicals industry (Open Mind Research group, 1996 p13.)	Medium ability to control. Management goals should include: a) development and public acceptance of new technologies and of disposal sites for the handling of historical problems b) intervention in the form of national programs (industry and government); national programs for handling PCBs, HCBs and OCPs as models; national approach to container minimisation and container collection needed c) commitment to source reduction programs	Data on disposal options generally not perceived to be sufficient; for one key source, see recent report on appropriate technologies for the treatment of scheduled wastes (CMPSF Environmental, 1997)

⁵ The precis provided here attempt to take into account and synthesise the various interpretations offered by survey respondents.

⁶ Wherever possible, this column attempts to synthesise perceptions about gaps in chemicals management strategies, as expressed by survey respondents. While these provide the suggestions of experts, they cannot be taken as recommendations for prioritising action by government industry.

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Storage and disposal of obsolete chemicals	10	National scale; Focus on decommissioned industries, and areas of intensive agriculture	Containers not washed correctly; wide geographic spread creates logistical difficulty; end users inadequately informed; collection programs for obsolete chemicals not well developed and expensive Note: overlap with hazardous waste problem	Pesticides, solvents, dangerous goods, household/garden chemicals	High in all sectors; highest for informants from agricultural industry	Low ability to control Policy needed on whether resources best spent on a national collection program. New technology (eg dissolvable packaging) is emerging; an industry waste reduction program for containers has been proposed for possible introduction in 1998; buyer training programs operating through Agsafe accreditation scheme.	Perception that data is available, but not adequately communicated, and that action is needed not more research
Pollution of Inland waterways	10	National scale; Areas of intensive agriculture such as Murray Darling Basin; focus of public attention on cotton growing areas; Mining areas, for example Tasmanian west coast	Agricultural run-off including pesticides, animal waste, and spray drift; mining wastes; input of agricultural pollutants linked to water use for irrigation; historical modes of chemical use; many agricultural chemicals developed overseas and not suited to Australian conditions	POPs; insecticides, herbicides; fertilisers, mining wastes	High for experts across all sectors; public concern about waterway pollution well documented (eg Dangar Research Group, 1993); the public sees deterioration rather than improvement in the problem (eg Taverner Research, 1997)	Low-medium ability to control. industry (for example, cotton growers) argue ability is high via Quality Assurance programs; management needs include: a) agreements about level of irrigation water use; b) tailor made cotton breeding programs coupled with toxic use reduction; c) education about whole farm management; d) wider use of QA programs.	Cause and effect linkages, and low level impacts need further research; catchment based water monitoring data lacking; major studies (eg CSIRO on cotton areas, WA herbicide use study); public access to data limited by commercial-in confidence requirements
Ranking 2: Problems with second highest level of concern							

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Soil contamination	5	National scale; Hot spots in major cities and in rural and mining areas	inadequate testing of old industrial land before zoning residential; old agricultural sites (for example, sheep dip sites); old mine sites; governments are among historical polluters; community not resourced for testing; on site treatment favoured under regulatory regime	Heavy metals, especially lead, arsenates; organo-chlorines; mine wastes	Experts from all sectors have identified this problem; not a problem that the public identifies as of high concern	Low ability to control historical problems; high control over future activity for example, via improved EMS; threat to land value creates secrecy; governments with vested interest in keeping residents on sites; historical problems need government solution; interdepartmental residue management groups needed.	Insufficient; some via NHMRC; no accessible register of sites; data on arsenicals very poor; effects on specific soil types need research
Chemical accidents during transport	5	National transport routes	Driver fatigue; penalties for mishandling are insufficient; distance from major centres problematic in mining areas; substitutes for dangerous chemicals not available	All hazardous chemicals; cited examples include plastic industry flammables in eastern states, cyanide for NT mining	High across all sectors; emerges as an issue of high public concern in industry surveys (Open Mind Research group, 1996)	Medium ability to control; management strategies could include: a) unified accreditation of handlers b) education of industry (for example, mining) to use safer alternatives c) fatigue management programs in transport industry	Good for accidents and response requirements; poor data exchange between companies; useful overseas databases, for example, Canada
Occupational health in agriculture	4	National scale; Focus on areas of intense agriculture	Inappropriate use with insufficient knowledge; labels an unsatisfactory substitute for MSDS; health impacts of pesticides when mixed with other chemicals; medical profession not educated; diffuse industry that lacks adequate education programs; poorest understanding concerns cell-level action of fungicides; inconsistent approaches by states sees different training requirements for users	Insecticides, herbicides, fungicides, fertilisers	Highest amongst user groups and trade unions	Low ability to control; management strategies could include: a) re-education of users b) re-education of medical profession c) research on mixing of chemicals d) extension of industry training programs e) reduction of use of chemicals	Documentation of cases not collated; poor data on chemical mixing; lack of notification requirements

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Chemical residues in food	4	National scale; with international trade implications	Australia generally has low levels of residue, though 'outbreaks' of increased concentrations occur; problems related to, in particular, multiple chemical sensitivity	Heavy metals; breakdown products of agricultural chemicals and plastics; public attention focussed on organochlorines in beef, helix in cotton, fungal residues in fruit, herbicides in beans and other vegetables	Highest amongst government informants; has emerged as an issue of increasing concern in surveys of public attitudes to the chemical industry (Open Mind Research group, 1996 p18.)	Medium ability to control; management needs include: a) pesticide reduction strategy b) increased monitoring of non-meat foods c) expanded farmers' quality assurance programs d) cohesion between States e) prediction of problems by location (for example, forecast levels of pesticide use) f) effective residue traceback programs g) clear market signals to producers; (trade requirements will drive solutions)	Endocrine disrupter research controversial; data gaps for certain foods; some data held confidential; National Residue Survey; National Basket survey
Air pollution	4	National scale; Rural-urban fringes	Range from transport emissions, to point source (industries), to spray drift issue in rural areas; inappropriate juxtaposition of industry and residential; inadequate reduction programs	Pesticides, vehicle and industry emissions	Highest amongst surveyed experts from green groups; air pollution from chemical plants is one of five key issues of high concern monitored by PACIA (Open Mind Research group, 1996)	Industry regulations in place but need enforcing; further separation of industry and residential areas needed, for example, on rural fringes; spray drift management programs need improvement; TUR programs needed	Good for vehicles; poor otherwise
Lower Ranking: Problems with lower level of concern							

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Occupational health - industry	3	National scale; specific workplaces	Management programs not fully effective; ad hoc implementation of workplace education; research funding withdrawn; problem regarded as less severe than OHS in agricultural sector	Various, for example, solvents	Focus for industry, trade unions	Management plans and systems in place; improved compliance with these needed; Federal commissioner suggested; further use of coronial system suggested; training of medical professionals needs improvement	Data extensive, but not keeping pace with new chemicals
Chemicals import - unknown formulae	3	International/national	Inaccuracies in MSDS; illegal trade in 'disguised' chemicals; control mechanisms inadequate, with poor compliance	Various, for example, pesticides, surfactants, hair products	Focus for government, NRA, NICNAS	Medium ability to control; industrial chemicals caught through workplace controls, but pesticides more difficult to monitor; compliance program recently introduced; interdepartmental activity to more fully involve Customs	Lack of robust statistics on imports
Groundwater contamination	2	Localised urban areas	Historical problems of poor management, but with possible continuing release of contaminated water; Altona (Vic), ICI (NSW) and Coburn Sands (WA) as examples of key sites	Chlorinated hydrocarbons	Local resident campaigns	Medium ability to control; Australian groundwater not heavily used, therefore incentive to keep pristine is lacking; Initiatives needed in areas of chemicals handling and storage; national remediation guidelines sought;	Reasonable for ICI Botany; others not available
Drinking water contamination	2	National scale; Rural areas	Overlaps with problem of groundwater contamination; run-off into drinking supplies (human and stock); spray drift; dwellings rarely purify water, therefore susceptible to agricultural chemical pollution	Pesticides, fertilisers	Government and user groups	Medium ability to control; education programs needed for farmers and town residents; irrigation water use needs curtailing; chemicals use needs rationalising/reducing	For example, CSIRO programs on river management
Chemical poisoning and suicides	2	Work-places; Homes; Rural/urban fringes	Overexposure across a broad range of professions and sources; medical profession inadequately trained, in particular on multiple chemical sensitivity	Broad range, for example, lead, organic solvents, agricultural chemicals	Highest for legal and medical professionals	Low ability to control; planning reforms needed for urban/rural fringes; chemical free zones suggested; most urgent need is training for medical profession;	Data extensive, but not well disseminated; research needed on multiple chemical sensitivity

Nature of the problem	No of respondents	Location and scale	Brief description of the problem ⁵	Chemicals/pollutants involved	Level of concern	Ability to control the problem and comments on management approach ⁶	Availability of data and research
Wildlife contamination	1	National scale; Local impacts	Overexposure of fauna; not monitored, therefore extent not well known; sporadic studies indicate seriousness; for example, koala, tawny frogmouth studies	DDT, heavy metals, pesticides, endocrine disruptors	overshadowed by other issues having a human health dimension	Not managed	Base line data needed.
Chemical storage - accidents and leaks	1	National; mines, urban sites	Problem of insufficient attention to detail, and failure to enforce regulations; tailings dams, industry sites in urban areas poorly designed and maintained	Various	Government emergency services	Medium ability to control; current focus is on emergency response; environmental management systems should provide preventative strategies; more focus needed on cleaner production programs	Research and generic publications good

Comments on Table 3-B

The above entries are by no means a complete analysis of each problem, and only the main points mentioned by key informants are noted.

With regard to 'level of concern', in general there is consistency between experts' emphasis on problems and public attitudes as expressed through recent industry surveys. For example, the experts' focus on hazardous waste disposal is echoed by high public concern expressed about the disposal of chemical waste (Open Mind Research Group, 1996).⁷ An exception to this is that soil contamination has been given significant emphasis by expert informants, particularly those representing governments, whereas public attitude surveys have given little attention to this issue.

⁷ The "disposal of chemical waste" was found to be of highest concern amongst five key concerns which have been monitored over three successive surveys conducted for the Plastics and Chemicals Industries Association. The other issues are air pollution arising from chemical plants, water pollution from chemical plants, accidents causing explosions or fires in chemical plants, and the potential for accidents involving trucks carrying chemicals (Open Mind Research Group, 1996).

A4.6 Structural issues

As previously suggested, it would be a misinterpretation of informants' views to confine the discussion of priorities to a list of discrete problems requiring narrowly focused management solutions. Many survey respondents preferred not to address the UNITAR guidance list (on which Tables A4-2 and A4-3 are based), arguing that broader structural issues are of greater concern. The need to address these underlying concerns has been expressed by representatives of all sectors, although perspectives on the nature of these weaknesses are influenced by the preferences of constituencies.

For example, chemical industry representatives regard public misunderstandings about the benefits of chemicals as an issue of high priority (a priority reflected in the commissioned attitude surveys cited above); whereas environment group representatives give high priority to what they regard as a general lack of government will to control industry coupled with what they see as failures of market based or voluntary programs of industry reform.

Environment groups give further emphasis to the lack of workable toxics use reduction programs, claiming that use minimisation is not a serious focus for either government or industry.' Society uses too much chemical' is a predominating value statement, and in suggesting priorities for waste management, environmentalists argue for a decrease in focus on 'end of pipe' solutions in favour of increased research and development of alternatives to chemical use. As a refinement of this view, environment group representatives have called, and continue to call, for outright bans on the use of broad classes of chemicals, such as the persistent organic pollutants. Their favoured management tools are typically regulatory, and they favour, for example, the rapid implementation of the National Pollutant Inventory, a strengthening of community right to know provisions across all legislation, and increased resources targeted at compliance measures.

Industry representatives nominate a quite different range of structural issues. One important concern is the viability of the Australian chemicals industry, given the small size of the Australian market and the foreign ownership of chemical companies. For some, part of this concern is that Australian users should have access to chemicals which are safest and most effective in Australian conditions, and that this objective is threatened by the import of less well suited chemicals. Industry representatives regard proposals for tighter regulations as impediments to maintaining Australian production, and possibly therefore disincentives for improved chemicals management. They regard the widespread use of environmental management systems (for example based on ISO 14000 prescriptions) as the most important approach to chemicals management, alongside greatly improved education programs

aimed at improving the skills of chemicals users and at gaining more positive public perception of chemicals.

Government representatives are most acutely aware of the many problems arising out of inconsistencies between jurisdictions, although such problems were raised across all sectors. Further discussion of this is provided below. Government representatives gave high priority to other general issues, including the need to combat public misconceptions about chemicals management, and with this the need for more 'scientific' coverage of chemicals issues in the media. The processes by which industry assesses and manages risk were regarded with suspicion by some government respondents, leading to the suggestion that uniform understanding of risk and how it is assessed should be encouraged Australia wide.

Finally, there were a number of structural issues given emphasis by industry, government and environment groups alike. For example, there is little dispute that Australia's small market creates limits on available expertise for chemicals management (for example, analytical expertise, or the ability to mount local research programs) leading to a call for tightly focused research programs based on careful prioritising of needs. This is further discussed in later sections. Some respondents have made suggestions at the broadest conceptual level, which are relevant to the ongoing reform of national coordinating mechanisms. These include, for example, the proposition that procedures for dealing with uncertainty need to be built in to regulatory mechanisms; and the suggestion that resources for assessment of chemicals should be more explicitly tied to desired social outcomes.

A4.7 Further comments from Key Informants

This section is a synthesis and interpretation of general comments made by key informants mostly in response to questions 3–7 of the survey. The purpose is to provide further qualitative analysis of gaps in chemicals management infrastructure. Comments are largely directed at the performance of governments in providing leadership in chemicals management.

A4.7.1 The need for national consistency

Over recent years, in part driven by the prescriptions of the 1992 Rio Earth Summit, a number of initiatives in Australia have given government officials at all tiers and some industry and environment group representatives a stronger sense of moving forward on chemicals management.

Two key reforms in particular are widely regarded as being successful: - the advent (in 1994) of national arrangements for the assessment and clearance of agricultural and veterinary chemicals under the National

Registration Authority for Agricultural and Veterinary Chemicals (NRA), and arrangements introduced in 1989 for the assessment of industrial chemicals under the National Industrial Chemicals Notification and Assessments Scheme (NICNAS).

Despite such advances, all respondents complained about the piecemeal nature of Australian legislation, saying there are significant overlaps and some gaps between jurisdictions. The call for greater uniformity and centralisation of control mechanisms was all but unanimous (implying that such systems were not yet available).

This dissatisfaction exists because in contrast to the above mentioned arrangements for assessment and registration, linkages concerned with chemicals usage are underdeveloped, and hampered by different politics, logistics and geographical/demographic constraints. An example is that Victoria is quite prescriptive, whereas the Northern Territory is developing a performance based approach.

The problem of national coordination with respect to usage of chemicals would be obviated by adopting a system that would 'bookend' the National Registration system. In other words, there is broad agreement that Australia should move over time to nationally co-ordinate chemicals 'cradle to grave', using either national legislation upon which all jurisdictions rely, or model legislation which relies on complementary adoptive legislation across all jurisdictions.

Some survey respondents are more optimistic about existing arrangements, pointing out that the national block of legislation concerned with usage is at least capturing the major classes of chemicals. As might be expected there is a full range of views about the strength of this legislation, ranging from 'too weak, industry does what it pleases' to 'too restrictive, Australian manufacturers are being squeezed out of business'. Also, there is some confusion about State to State differences, State to Commonwealth differences and Commonwealth department to Commonwealth department differences. For example, the Report of the Small Business Deregulation Taskforce (Bell, 1996), implies the need for further national dialogue about the grey areas between the NRA and NICNAS.

NICNAS also attracted some criticism from industry respondents, because it lacks a strong technical basis, and there is a perception that it does not allow adequate industry consultation. Meanwhile, environmental group representatives complained of what they see as closed-shop secrecy of government departments in maintaining confidentiality for commercially sensitive information.

Another identified gap is the lack of enforceable national requirement to track hazardous waste. There are agreements, but their implementation is too reliant on informal personal contact between State officials. The National Environment Protection Measure for the movement of

controlled wastes, if it can obtain support from all states, will resolve much of this problem.

The least satisfactory legislation has been that seen as politically inspired, without reference to a cohesive framework. The Ethanol Bounty Scheme was cited by one respondent as an example. It has also been pointed out that in some jurisdictions, government departments with control over chemicals are also responsible for fostering the chemical industry or chemicals using industries, which can produce conflicts of interest (for example, environmental protection by planning departments or enforcement of worker safety by mines departments). The enforcement of controls should not be the province of such departments.

A4.7.2 Resources

Several respondents seek rationalisation of the many committees, forums, and task forces that are tackling coordination problems, with the perception by non-government representatives that much activity is too diverse. There is substantial complaint from both industry and environmentalists about the amount of time and money spent on Intergovernmental committees with insufficient outcome. Some particular slow-downs are perceived. For example, the delays in establishing the National Pollutant Inventory (NPI) after what had been three years of positive progress by industry, government and environmentalists.

Resources for the NRA are perceived to be workable, in contrast with seriously under-resourced State use management programs. There are some reservations about the budget for the NRA, being a fraction of what would be required to deliver full registration.

Charges to industry for chemicals registration under the NRA, now approximately seven times what they were under old state based schemes, mean the cost of registration is now passed on to producers and therefore consumers. A useful contrast is with food registration, the cost of which is borne by the public (as a public benefit) whereas chemical registration is regarded as a private benefit, and privately funded.

While industry supports moves to centralise regulation, for example through the activities of the National Environment Protection Council, there remains an industry perception that consultation on reforms is inadequate. Some survey respondents consider that the National Environment Protection Council needs more resources and more good will. Some propose that its terms of reference should be reviewed, giving it authority with respect to implementation as well as delegatory powers.

A4.7.3 State coordination

There is a perception that significant reforms have occurred in many states over the last five years. To give an example, 1996 legislation in Tasmania substantially overhauled previous laws. In that state, a Hazardous Waste Management strategy was introduced four years ago, with sunset clauses that nominated 1998 as the deadline for ceasing to take liquid wastes to landfill. This has given rise to a number of recent government and industry initiatives.

Across all states, a wide range of management initiatives have enhanced public participation in chemicals management. Typical local mechanisms include liaison between State and Local government officers and community committees, for example local pesticide committees. Such committees often bring in re-sellers where those re-sellers are prepared to adopt a community service mentality.

Likewise there are many examples of formal mechanisms for liaison between government departments. In at least one state, for example, a successful committee on chemicals management brings together the EPA, Agriculture and Workcover.

In State legislation, there is a trend towards performance based regulation or self regulation, which throws responsibility on to industry. Several respondents argue too much responsibility now resides with industry to reach desired endpoints. For example, regulations on hazardous chemicals handling require industry to determine hazardous characteristics for every chemical on a site, and some industry representatives have suggested that the expense/complexity of this may lead to non-compliance.

With regard to control of usage, much interstate coordination relies on *ad hoc* linkages, sometime wholly dependent on working relationships between individual officials and their counterparts interstate. This approach, while lauded by many respondents, has also produced inconsistencies, since for example two states may work in partnership to develop informal protocols which are different to those used elsewhere.

There is a strong contention from environmentalists and from several industry people, plus tacit agreement from several government officials, that much state legislation is not enforceable or not enforced. Fines are regarded as too low. Policing is seen as an impossible task, with the chances of offenders being caught very low. Lack of uniformity across states was identified by some respondents as a cause of non-compliance.

A4.8 Conclusion

It would be reasonable to conclude that developing a National Profile of Chemicals Management Infrastructure is itself an important part of improving chemicals management in Australia. Several respondents made remarks of this kind, and put the view that in Australia, the period since the 1992 Earth Summit has seen many significant developments in environmental management, driven in part by the international processes established under Agenda 21.

However, this view needs to be set against some of the less positive general findings of this survey of key informants. For example, there are users of agricultural chemicals who believe that it is possible that the most environmentally sound management approaches are beyond reach, as some Australian chemical producers are dictated to by overseas parent companies and these users perceive that they must import formulations unsuited to Australian conditions. There are government representatives who see little hope of adequately enforcing current legislation because monitoring and inspection programs lack resources. For industry, there remains very real financial difficulty for chemical companies being asked to fund not only future management programs but also programs aimed at historical problems which originated in earlier times when different social objectives prevailed. For environmentalists, perhaps the most frustrating gap in chemicals management is the lack of freely circulating information from which improved education programs can be devised. Finally, there is consensus that such education programs are indeed required though not yet adequately developed and that these programs should be targeting professionals (for example, medical practitioners), downstream industry users (such as farmers) and the general public who use chemicals.

Attachment A4-1: Interview Questions, Key Informants Survey

Phone interview— National Profile on Australia's Chemicals Management Infrastructure

The following questions, arranged in three parts, will form the basis of the interview.

PART A: Confirmation of your details

The researcher will confirm the way in which you are involved in chemicals management in Australia, and check contact details for future reference. (Please note that your response will be anonymous.)

PART B: Priority concerns

These questions will help to diagnose and prioritise issues associated with chemical production, import, export and use.

Q1. Problem areas

- 1.1 What do you regard as the most important problems/issues associated with chemicals import, production, use and disposal?

Note: The researcher will establish with you a list of topics for discussion using Questions 2.1-2.11. A United Nations guidance document has suggested the following list of possible topics, but please feel free to nominate other issues:

- air pollution
- pollution of inland waterways
- marine pollution
- groundwater pollution
- soil contamination
- chemical residues in food
- drinking water contamination
- hazardous waste treatment/ disposal

- occupational health: agriculture
- occupational health: industrial
- public health
- chemical accidents; industrial
- chemical accidents: transport
- unknown chemical imports
- storage / disposal of obsolete chemicals
- chemical poisoning / suicides
- persistent organic pollutants

Q2. Problem assessment

With regard to each of the problems you have nominated,

- 2.1 Is the scale of the problem mainly local, regional, national or international?
- 2.2 Is the problem confined to particular locations, and if so where?
- 2.3 How would you characterise the problem?
- 2.4 What categories of chemicals are involved?
- 2.5 Is the data/research on this problem sufficient, insufficient or non-existent, and why? (For example, we could consider studies by government or inter-departmental committees.)
- 2.6 Where data/research does exist, where can it be obtained and is it readily available?
- 2.7 With current resources/management infrastructure, would you say our ability to control the problem is high, medium or low?
- 2.8 How is the problem being managed at present?
- 2.9 What source reduction programs are in place?
- 2.10 How do you think the problem should be managed in the future?
- 2.11 For this problem, what additional comments do you have?

Question 2 should be addressed for each topic identified in Question 1.

PART C: Activities and Initiatives.

These more general questions are about your overview of chemicals management in Australia.

Q3. Control Mechanisms

What general comments do you have about control mechanisms (Are they appropriate, effective, and comprehensive? Are there overlaps?), with reference to:

- 3.1 Legislation for chemicals management? (Examples?)
- 3.2 Non regulatory mechanisms such as incentive systems, or voluntary industry programs? (Examples?)
- 3.3 The activities/priorities of ministries, agencies and other groups involved with chemicals management? (As a particular example, we could consider the work of inter-departmental agencies.)
- 3.4 Coordinating mechanisms? (Examples?)
- 3.5 International linkages? (Examples?)

Q4: Research and Technical Infrastructure

- 4.1 What problems are associated with access and use of chemicals data/research?
- 4.2 How do you suggest the existing data/research mechanisms could be strengthened?
- 4.3 What are the strengths and weaknesses of the existing technical infrastructure for chemicals management (for example, analytical laboratories, government information systems, industry facilities)?

Q5: Public participation and information sharing

- 5.1 What comments do you have on mechanisms for co-operation between government and non-government sectors in chemicals management?
- 5.2 What comments do you have on those activities/initiatives in all sectors which are designed to provide information and raise awareness amongst workers and the general public.

Q6: Resources

- 6.1 What is your view of the level of technical and human resources available in Australia for chemicals management?

Q7: Other concerns

- 7.1 Do you any other comments relevant to a National Profile on Chemicals Management Infrastructure?

We thank you for your participation.

Appendix

5

NATIONAL COORDINATING TEAM MEMBER DETAILS and

CONTACT INFORMATION FOR ORGANISATIONS INVOLVED IN CHEMICALS MANAGEMENT IN AUSTRALIA

Contact information is provided.

A5.1 Membership of the National Coordinating Team which supervised the development of the National Profile of Australia's Chemical Management Infrastructure

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Plastics and Chemicals Industry Association

Mr Ian Swann
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Plastics & Chemicals Industry Association
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471-513 Koyoriot Road
ALTONA VIC 3018
Australia

National Registration Authority for Agriculture and Veterinary Chemicals

Mr Greg Hooper
Deputy Executive Director
National Registration Authority for Agriculture and Veterinary
Chemicals
PO Box E240
KINGSTON ACT 2604
Australia

Worksafe Australia

Dr Margaret Hartley
Director
NICNAS
Worksafe Australia
GPO Box 58
SYDNEY NSW 2001
Australia

Department of Health and Aged Care

Dr Brian Priestly
Scientific Director
Chemicals and Non-prescription drug branch
Department of Health and Aged Care
GPO Box 9848
CANBERRA ACT 2601
Australia

Department of Agriculture, Fisheries and Forestry

Mr Stanford Harrison
Chemicals and Biologicals Branch
Department of Agriculture, Fisheries and Forestry
GPO Box 858
CANBERRA ACT 2601
Australia

Department of Environment and Heritage

Mr Mark Hyman
Assistant Secretary
Chemicals and the Environment Branch
Environment Australia
E305
KINGSTON ACT 2604
Australia

A5.2 Contact Details of Organisations Involved in the Management of Chemicals

A5.2.1 Government Organisations and Agencies

Australian Capital Territory Government Contact:

Department of Urban Services
Environment ACT
PO Box 144
Lyneham ACT 2602
Australia
Website: <http://www.act.gov.au>
ph: 61 2 6207 9777

Commonwealth Government Contacts:

Australia and New Zealand Food Authority
PO Box 7186
Canberra MC
ACT 2610
Australia
Website: <http://www.health.gov.au/anzfa>
ph: 61 2 6271 2222

Department of Agriculture, Fisheries and Forestry
Chemicals and Biologicals Branch
Department of Agriculture, Fisheries and Forestry
GPO Box 858
CANBERRA ACT 2601
ph: 61 2 6272 3933
Website: <http://www.daff.gov.au>

Department of Foreign Affairs and Trade
Environment Branch
Department of Foreign Affairs and Trade
CANBERRA ACT 0221
ph: 612 6261 9111
website: www.dfat.gov.au

Department of Health and Aged Care
Chemicals and Non-prescription drug branch
Department of Health and Aged Care
GPO Box 9848
CANBERRA ACT 2601
ph: 61 2 6289 1555
Website: <http://www.health.gov.au>

Department of Employment, Workplace Relations and Small Business
GPO Box 9879
CANBERRA ACT 2601
ph: 61 2 6243 7333
<http://www.dwrsb.gov.au>

Environment Australia (Department of Environment and Heritage)
Chemicals and the Environment Branch
Environment Australia
E305
KINGSTON ACT 2604
Australia
Website: <http://www.environment.gov.au/epg/chemicals.html>
ph: 61 2 6274 1111

National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
GPO Box 58
Sydney NSW 2001
Australia
ph: 61 2 9577 9578
Website: <http://www.worksafe.gov.au>

National Occupational Health and Safety Commission (NOHSC)
GPO Box 58
Sydney NSW 2001
Australia
ph: 61 2 9577 9555
Website: <http://www.worksafe.gov.au>

National Registration Authority for Agriculture and Veterinary Chemicals
PO Box E240
Kingston ACT 2604
Australia
ph: 61 2 6272 5158
Website: <http://www.dpie.gov.au/nra/welcome.html>

Therapeutic Goods Administration
c/o Department of Health and Aged Care (see above)

Local Government Contact:

Australian Local Government Association
8 Geils Court
DEAKIN ACT 2600
(02) 6281 1211
Website: <http://www.alga.org>

New South Wales Government Contact:

New South Wales Environment Protection Agency
PO Box 1135
Chatswood NSW 2057
Australia
ph: 61 133155

Northern Territory Government Contact:

Department of Lands, Planning and Environment
GPO Box 1680
Darwin Northern Territory 0801
Australia
ph: 61 8 8924 4050

Queensland Government Contact:

Queensland Department of Environment and Heritage
PO Box 155
Albert Street
Brisbane Queensland 4002
Australia
ph: 61 7 3227 6422
Website: <http://www.env.qld.gov.au>

South Australian Government Contact:

Department of Environment, Heritage and Aboriginal Affairs
Environment Protection Agency
GPO Box 2607
Adelaide South Australia 5000
Australia
ph: 61 8 8204 2002
Website: <http://www.dehaa.sa.gov.au>

Tasmanian Government Contact:

Department of Primary Industries, Water and Environment
Environment and Planning Division
GPO Box 1396P
HOBART TAS 7000
ph: 61 3 6233 6518
Website: <http://www.dpiwe.tas.gov.au>

Western Australian Government Contact:

Department of Environmental Protection
PO Box K822
Perth Western Australia 6842
Australia
ph: 61 8 9222 7000
Website: <http://www.environ.wa.gov.au>

Victorian Government Contact:

Environment Protection Authority
477 Collins St Melbourne
GPO Box 4395Q
MELBOURNE VIC 3001
Australia
ph: 61 3 9 628 5533
Web Site: <http://www.epa.vic.gov.au>

A5.2.2 Non Government Organisations:

Avcare - National Association for Crop Protection and Animal Health -
Locked Bag 916
Canberra ACT 2601
Australia
ph: 61 2 6230 6399
Website: <http://www.avcare.org.au>

Australian Chemical Specialties Manufacturers Association
GPO Box 1469N
Melbourne VIC 3001
Australia
ph: 61 3 9690 8588
Website: <http://www>.

Australian Consumers' Association
57 Carrington Road
Marrickville NSW 2204
Australia
ph: 61 2 9577 3333
Website: <http://www.>

Australian Institute of Petroleum
Level 23
500 Collins Street
Melbourne VIC 3000
Australia
ph: 61 3 9614 1466
Website: <http://www.aip.com.au>

Australian Workers' Union
685-691 Spencer Street
WEST MELBOURNE VIC 3003
Australia
ph: 61 3 9329 8733
Website: <http://www.>

Chemicals in Schools and Children
Anne & Don Want
ph: 61 2 6657 3273
website: <http://www.spirit.com.au/~rdi/cas/>

Environmental Defenders' Office
Lvl 1
Office 6a
Bunda Street
CANBERRA ACT 2601
ph: 61 2 6247 9420

Environment Management Industry Association of Australia
PO Box 1495
OSBORNE PARK WA 6916
Australia
ph: 61 8 9242 2422
Website: <http://www.qnet.net.au/~esi>

Greenpeace Australia Ltd
National Office
Level 4/35-39 Liverpool Street, SYDNEY, NSW 2000
Website: <http://www.greenpeace.org.au>
Toxics Campaign Coordinator
PO Box 2026
Fitzroy VIC 3065
ph: 61 3 9 486 8662

Minerals Council of Australia
PO Box 363
Dickson ACT 2602
Australia
ph: 61 2 6279 3600
Website: <http://www.minerals.org.au>

National Advisory Body on Scheduled Waste
c/o Environment Australia
Website: <http://www.erin.gov.au/epg/swm.html>

National Farmers' Federation
PO Box E10
Kingston ACT 2604
Australia
ph: 61 2 6273 3855
Website: <http://www.nff.org.au>

National Toxics Network
47 Eugenia Street
Rivett ACT 2611
ph: 61 2 6288 5881
Email: biomap@spirit.com.au

Plastics and Chemicals Industry Association (PACIA)
GPO Box 1610M
Melbourne VIC 3001
ph: 61 3 9654 2199
Website: <http://www.wark.csiro.au/PACIA/chemhandling.html>

The Australian Paint Manufacturers' Federation Inc.(APMF)
Private Bag 938
North Sydney NSW 2060
Australia
Telex AA22050
ph: 61 2 963 7663

Toxic Action Group (TAG)
Coordinator
PO Box 410
Dorrigo NSW 2453
Australia
ph: 61 2 66573273
Email: jcranny@midcoast.com.au

Waste Management Association of Australia
PO Box 664
Randwick NSW 2031
Australia
ph: 61 2 9385 6177

World Wide Fund for Nature
21 Church Street
Hawthorn VIC 3122
Australia
ph: 61 3 9853 7344
Website: <http://www.wwf.org.au>

A5.2.3 Technical Organisations:

Australian Academy of Technological Sciences and Engineering
Ian McLennan House
197 Royal Parade
Parkville Victoria 3052
Australia
ph: 61 3 9347 0622
email: atse@mail.enternet.com.au

Australasian Society for Ecotoxicology
Centre for Ecotoxicology
University of Technology, Sydney
Westbourne Street
GORE HILL NSW 2065

Commonwealth Scientific Investigative Research Organisation (CSIRO)
Centre for Advanced Analytical Chemistry
PMB 7
BANGOR NSW 2234
Australia

CRC for Waste Management & Pollution Control
PO Box 1
KENSINGTON NSW 2033
Australia
ph: 61 2 9385 5038

National Association of Testing Authorities, Australia (NATA)
71-73 Flemington Road
Nth Melbourne Victoria 3051
Australia
ph: 61 3 9329 1633
Website: <http://www.aaa.com.au/nata>

The Institute of Engineers, Australia - Chemical Engineering College
11 National Circuit
Barton ACT 2600
Australia
ph: 61 2 6270 6555
website: <http://www.ieaust.org.au>

The Royal Australian Chemical Institute
1\21 Vale Street
North Melbourne Vic 3051
Australia
ph: 61 3 9328 2033
website: <http://www.raci.org.au>

A5.2.4 International Organisations:

Intergovernmental Forum on Chemical Safety
c/o World Health Organisation
20 Avenue Appia, CH-1211 Geneve 27
ph: 41 22 791 4333
Website: <http://www.who.int/ifcs/>

OECD
Environmental Health and Safety Division
2 rue Andre Pascal 75775 Paris CEDEX 16
ph: 33 1 45 24 82 00
Website: <http://www.oecd.org/ehs/>

UNEP Chemicals
Case Postal 356
15, Chemin des Anemones CH - 1219 Chateline Geneva Switerland
ph: 41 22 979 91 11
Website: <http://www.irtpc.unep.ch/>

UNITAR
Palais des Nations
CH-1211 Geneva 10 Switerland
Website: <http://www.unitar.org/>

FAO
Vaiale delle Termi di Caracalla
001000 Rome Italy
Website: <http://www.fao.org>

6

Appendix

COMPARISON OF AUSTRALIA'S NATIONAL PROFILE FOR CHEMICALS MANAGEMENT INFRASTRUCTURE AND THE STRUCTURE SUGGESTED BY UNITAR

A brief comparison between this National Profile Structure and the suggested UNITAR structure is provided

Table A6–1: Comparison between National Profile and UNITAR structure

Suggested UNITAR Structure	Corresponding Element of Australia’s National Profile
Introduction the National Profile	Introduction
Executive Summary	Executive Summary
Chapter 1: National Background Information	Chapter 1
Chapter 2: Chemical Production Import, Export and Use	Chapter 2
Chapter 3: Priority Concerns Related to Chemical Production, Import, Export and Use	Chapter 5 briefly discusses priority concerns of non-government organisations and Chapter 9 discusses recent priority concerns of government. Appendix 4 provides an survey of priority concerns.
Chapter 4: Legal Instruments and Non-Regulatory Mechanisms for Managing Chemicals	Chapter 3 and Appendix 1
Chapter 5: Ministries, Agencies and Other Institutions Managing Chemicals	Appendix 1 identifies relevant agencies (by legislation) and Chapters 3 and 4 discuss government institutions managing chemicals
Chapter 6: Relevant Activities of Industry, Public Interest Groups and the Research Sector	Chapter 5
Chapter 7: Inter-ministerial Commissions and Coordinating Mechanisms	Chapter 4
Chapter 8: Data Access and Use	Chapter 6
Chapter 9: Technical Infrastructure	Chapter 7: also discusses non-government institutions managing chemicals
Chapter 10: International Linkages	Chapter 8
Chapter 11: Awareness/ Understanding of Workers and the Public	addressed in Chapter 5 and Chapter 6
Chapter 12: Resources Available and Needed for Chemicals Management	Chapter 9: Conclusion summarises progress to date and identifies areas of possible future activity
Various Annexes	Bibliography, Appendices 2, 3 and 5

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RESPONSE TO NATIONAL PROFILE OF CHEMICALS MANAGEMENT INFRASTRUCTURE IN AUSTRALIA:

Do you have any general comments to make on this, Australia's first national profile?

Did you find the national profile a useful introduction into Australia's chemicals management infrastructure?

Please identify any areas that you believe this national profile has missed or not addressed in enough detail?

National profiles are designed to be updated at regular intervals. What do you think future Australian national profiles should address?

Please provide any comments on the National Profile to:

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